

PBC PLA LU 1972

Palm Beach County Land Use
Plan



PALM BEACH COUNTY LAND USE PLAN

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Palm Beach County land use

* Superseded by Comprehensive Plan

LAND USE PLAN

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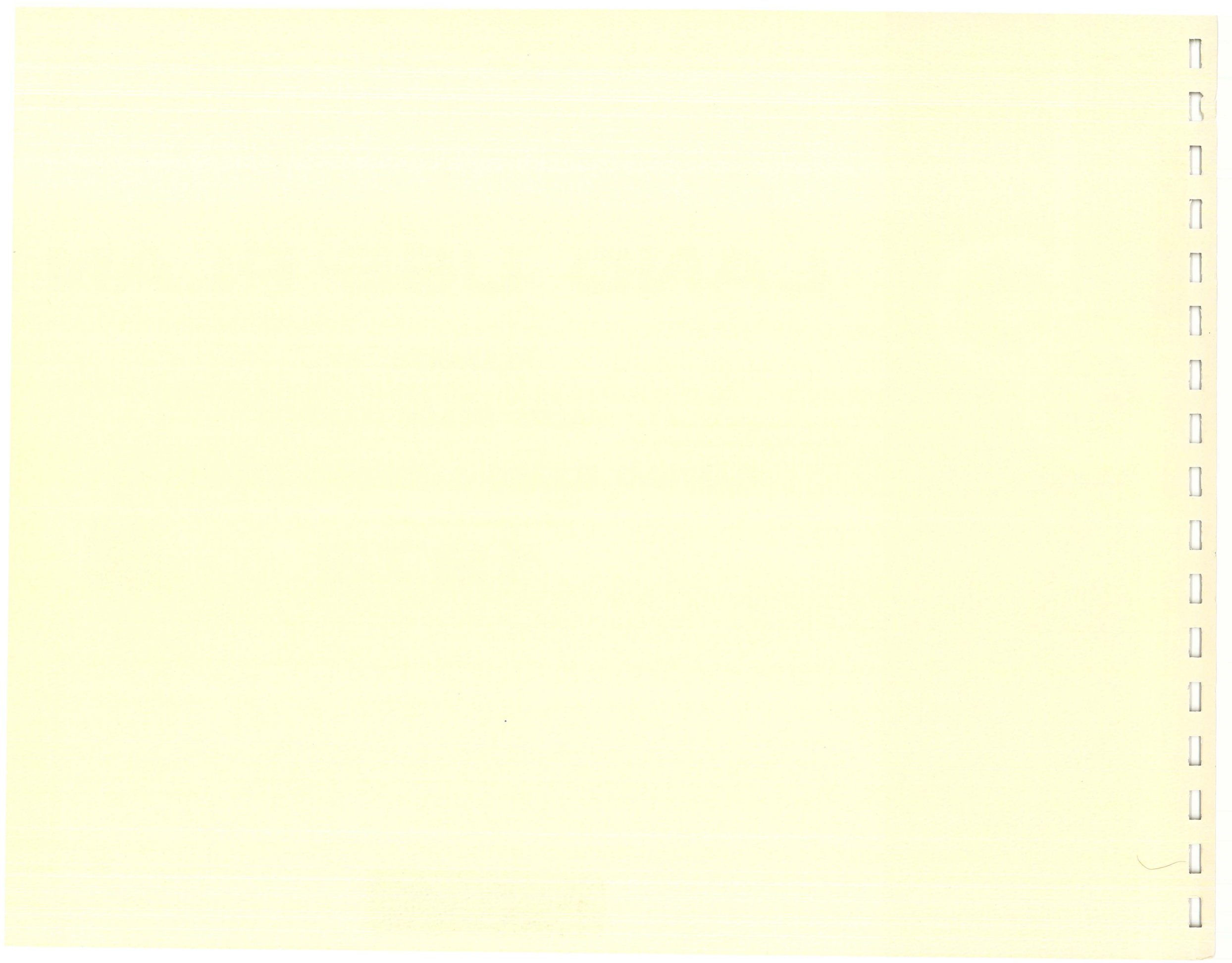
PALM BEACH COUNTY

PLANNING ZONING & BUILDING DEPARTMENT

1972

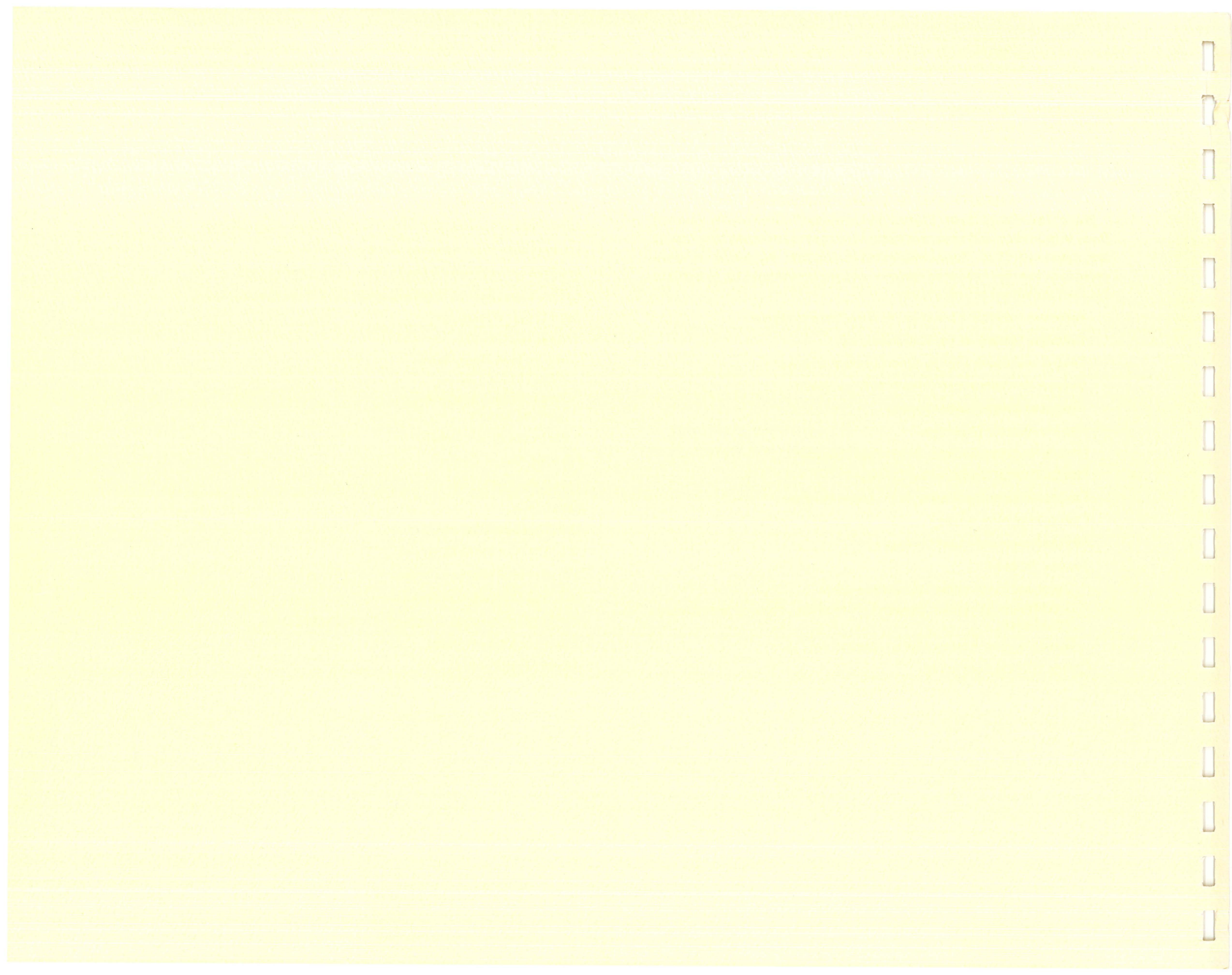
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**"Do no dishonor to the earth
lest you dishonor the spirit of man"**

**—Henry Beston
1888—
American naturalist and author**



CREDITS AND ACKNOWLEDGEMENTS

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Zero Population Growth
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PREFACE

We're number one!

Palm Beach County has the highest rate of residential development in the nation. This fact, based on issuance of building permits in the County, was recently verified by a semi-annual survey of U.S. Housing markets. (1) The current rate is fifty-five building permits per one thousand population. Palm Beach County has become the focal point of development within South Florida. Dade and Broward Counties, the two previous sites of the Florida land development boom, have reached a saturation point as virtually all available land has been developed or at least purchased for future use. Growth has moved north from Miami and is now centered in Palm Beach County. The present population of the County is slightly less than 400,000.

Various population forecasts see the ultimate number of residents in the County falling somewhere between 750,000 and several million. As important, if not more important, than the number of people is the rate at which they become absorbed into the County. Obviously the faster a population expands the greater the immediate burden placed on public services and natural resources. In the past, cities have had decades, even centuries, to provide the community services needed to accommodate their growth. Palm Beach County may not be that fortunate. The faster the rate of growth, the greater the expense to the present residents of the area both in terms of tax dollars and depletion of resources. Extremely rapid, uncoordinated growth of an area has traditionally brought a poorer quality of development than a pace which allows time for consideration and reflection. A great immigration of persons into an area, an apparent economic blessing in its early stages, often transforms into a nightmare of urban confusion through lack of thoughtful planning and inadequate zoning and subdivision regulations.

The Palm Beach County Land Use Plan does not attempt to correlate population projections to specific points in time. It does assess the amount of population our public services and natural resources can accommodate—without a deterioration in the present quality of living—at any point in time. The Land Use Plan includes guidelines so that growth may be orderly, urban distress minimized, and the integrity of the land preserved.

(1) Survey conducted by the Advance Mortgage Corp. of Detroit.

LAND USE PLAN AS A GUIDE TO GROWTH

LAND USE PLAN AS A GUIDE TO GROWTH

The damaging effects to the environment of haphazard and unplanned development have been much discussed and well-publicized by the news media, governmental agencies and concerned groups of citizens, with waste of resources, pollution, and loss of open space being among the prime detriments. Utilization of land is a major issue of current public policy. Traditionally, the use of land has evolved from interplay between economic marketability and practical politics. The following guidelines for use of the land in Palm Beach County seek an equitable fusion of economics, political considerations and preservation of essential natural qualities. Growth in itself is neither destructive nor undesirable; however, its desirability is measured by its quality, its cost—both direct and indirect—to the public, and its impact on the environment. Growth explosions in Dade and Broward Counties have already depleted the natural resources and tarnished the tropical-paradise image which have long characterized South Florida. The intent of the Palm Beach County Land Use Plan is to achieve a balance between public concern and private interests—harmony between man and nature. Understanding of the interrelated natural systems of the environment is the key to well-coordinated land planning.

It is not the intent of the Palm Beach County Land Use Plan to establish guidelines and regulations for the allocation of small and specific parcels of land, since this is a function of the Zoning Ordinance. The Land Use Plan is a guide to the most compatible, least disruptive, uses of the land on a broad, general-area basis. It also serves as a caution that our natural resources not be exhausted by more inhabitants than they can reasonably support.

The Plan is not ultimately definitive. It is simply a gauge for determining the optimum desirable development under presently-known resources. The Plan will need consistent administration and continual revision as existing conditions may alter relative to soils, water management and availability, transportation systems, economic compositions, community facilities and other prime determinants of land use. New technological innovations in water management, transportation systems and waste disposal may provide assistance to existing resource capabilities and have considerable impact on land development. These factors, if they evolve, will need to be considered in future planning

updates. The Plan is not geared to any specific date in time, but is concerned simply with the ability of existing resources to service the population.

Standard technical procedure in constructing a land use plan involves projecting population estimates to some future date and estimating the facilities and resources which need to be available at that point in time to service the population. The procedure in constructing the Land Use Plan for Palm Beach County was conceptually different in that an ultimate population which could be handled by existing resources was calculated, regardless of the length of time required to reach that population figure. There were several reasons for choosing this approach. First, population projections and forecasts, based upon varying input data and analyzed by different agencies, often result in widely varying population predictions. As will be seen later in this text, population estimates for this County, from various sources, covered a range of more than one million people. A second factor influencing the selection of the "ultimate-population" approach was the pattern of recent growth in Palm Beach County. Ordinary growth patterns show expansion outward from an urban core city with existing services and utilities following the population. The recent growth pattern of Palm Beach County has seen new towns, requiring new facilities and utilities, arising remote from the established urban corridor along the coast. Further support of the "ultimate population" approach came from its application in determining the County's ultimate highway facility needs, which includes the acquisition of future rights-of-way at an earlier date, and at a more economical cost to the public.

In constructing the Land Use Plan for Palm Beach County, existing resources and facilities were first evaluated to determine what level of population they could support without lowering the existing quality of life for the area. Data was assembled from various governmental agencies and private sector sources relative to drainage capabilities of the existing primary and secondary canal systems, available water supplies, highway systems including existing and proposed construction, recreational facilities, environmentally sensitive and endangered areas, soils limitations, commercial and industrial space needs and existing land uses within the County. This data was analyzed and reviewed with engineers, planners and other professionals for accuracy and feasibility. The ability of these resources and services to support a population level was

evaluated and it was estimated that the County's existing services, particularly drainage and water supply capabilities, could accommodate a maximum of 1.2 million people. This estimate was compared to the population figure which would have resulted if the remainder of the County's undeveloped land were developed at existing zoning densities, a figure ranging between six and nine million people. The Land Use Advisory Board determined that a reduction to 1.2 million persons was too drastic a departure from present trends, would cause severe economic hardship and would be an unreasonable limitation for a plan describing ultimate growth. A compromise figure of 2.5 million was proposed by the Land Use Advisory Board and staff. Modifications adopted during hearings before the Board of County Commissioners raised this figure to approximately three million. It must be borne in mind, and taken into account in future evaluations of the Plan's applications, that this figure can only be supported by an increase in drainage and water supply capabilities through technological advances during the next twenty years. If these advances do not occur the population described by the Plan will need to be scaled down accordingly.

Conversely, technological innovations, such as economically-feasible desalinization of ocean water, may at some point in time increase the ability of the County to accommodate a resident population in excess of the three million figure. The Land Use Plan has the flexibility to permit further growth at such time as technology can accommodate the increased number of people without a reduction in the quality of life. The Land Use Plan is not a static document intended to retain its present form in perpetuity, but is subject to periodic revision as newly available data indicates a need to revise the land use distribution to either expand or contract the resultant population. A mandatory annual update is in fact required by the enabling legislation establishing the Land Use Plan.

Orderly, incremental growth can be accomplished only when the needed services grow with the population. If a segment of the people are without adequate drainage, potable water supply, highway facilities, municipal services such as fire and police protection and refuse removal, public health services and recreational facilities, an imbalance is created which may affect the quality of life throughout the area.

The intent of this Plan is to caution against the undesirable results of unbalanced growth and to establish guidelines for orderly development

of the land, so that the natural environmental balance and existing amenities will be preserved to the greatest extent in making Palm Beach County a more pleasant place for all to live.

The distribution of land by use, as provided in the Land Use Plan, is depicted by Figures 1 and 2.

URBAN LAND USE DISTRIBUTIONS - L.U.P.

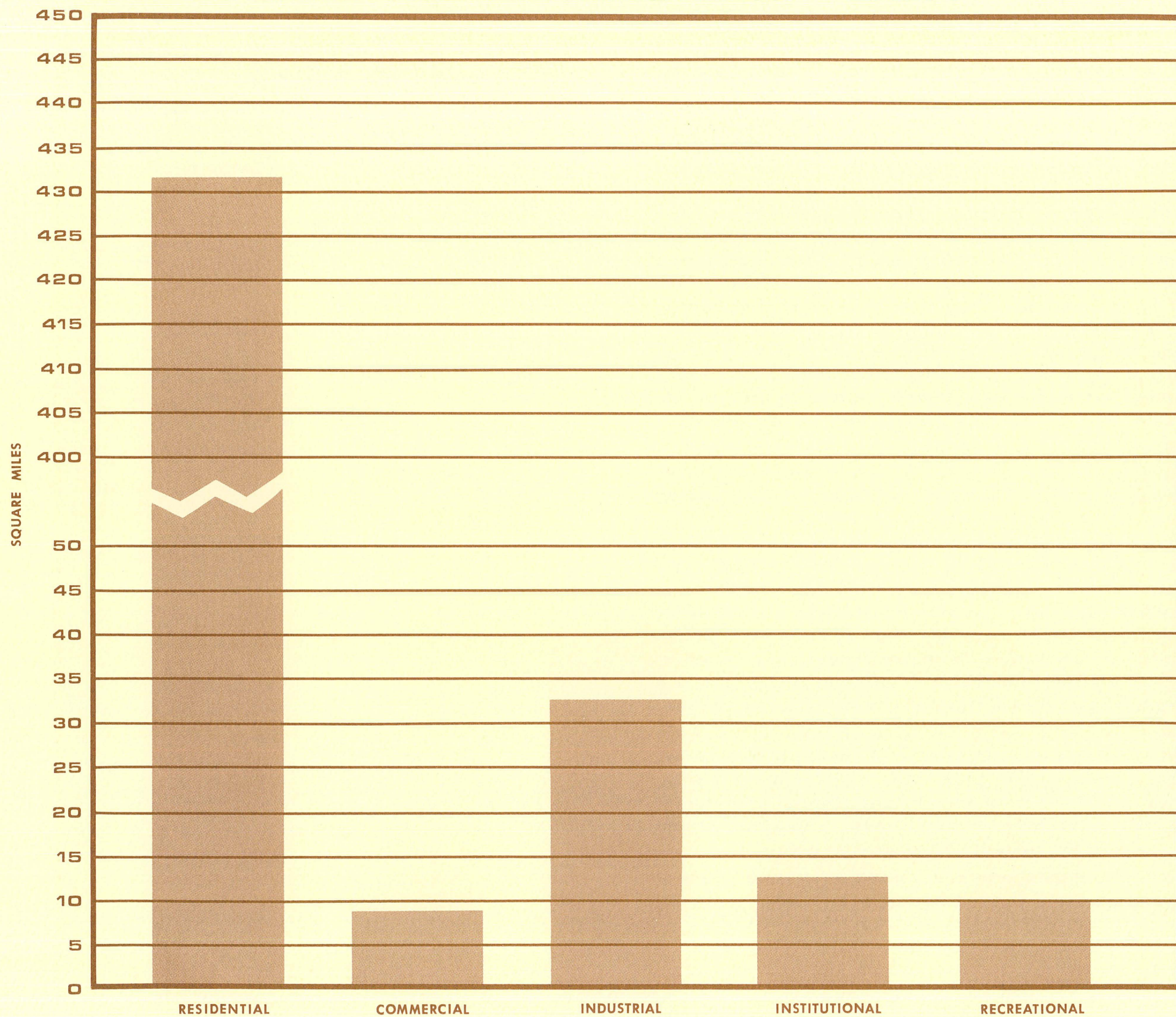


FIG. 1

URBAN AND NON-URBAN LAND USE - L.U.P.

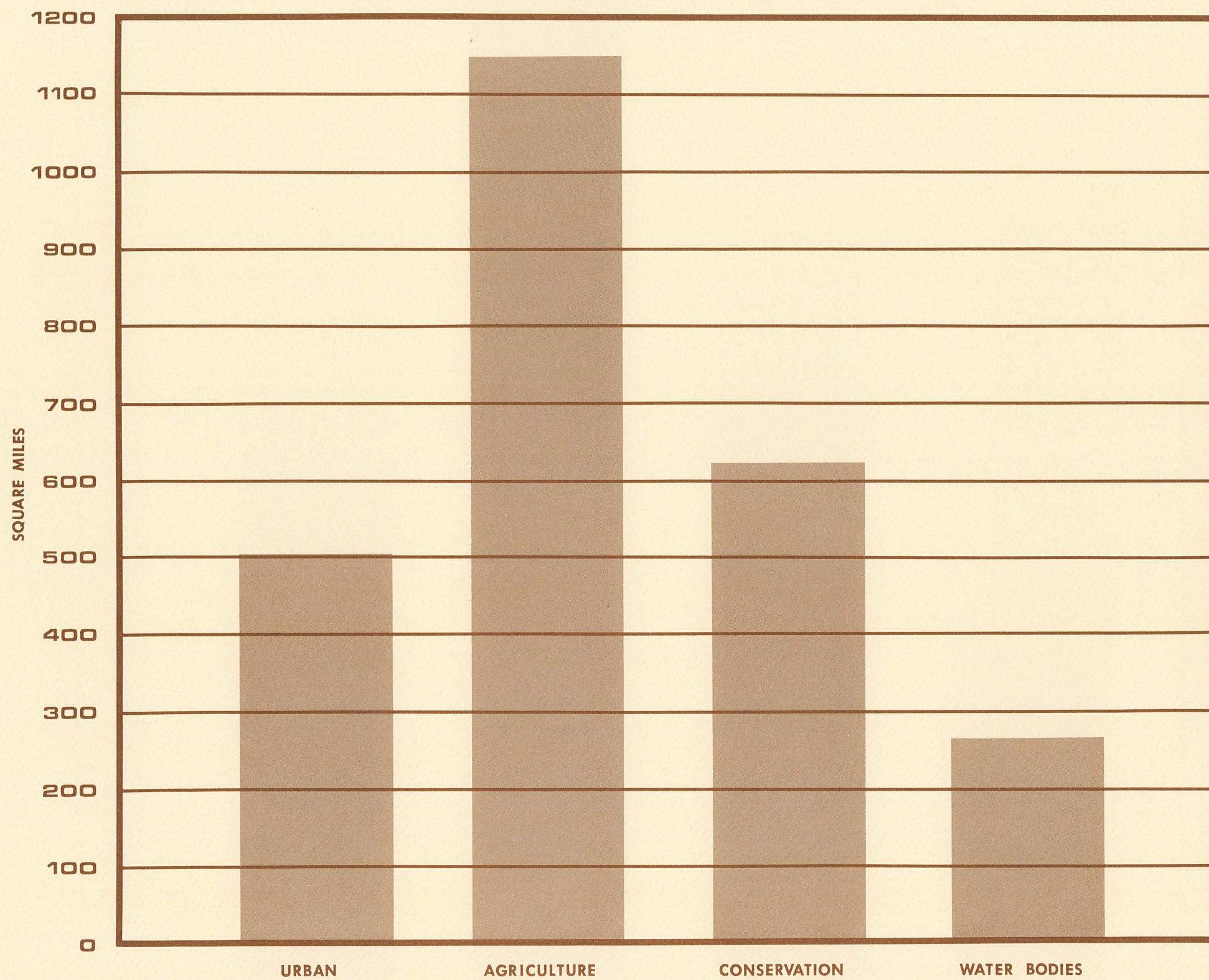


FIG. 2

**LAND USE PLAN AS A BASIS FOR
ZONING AND LAND DEVELOPMENT**

LAND USE PLAN AS A BASIS FOR ZONING AND LAND DEVELOPMENT

The Palm Beach County Comprehensive Land Use Plan is an official public document adopted by the governing body, the Board of County Commissioners of Palm Beach County, as a general, long range policy guide to decisions that must be made about the present and future development of the unincorporated area of the County.

The Land Use Plan is in the first place a policy-setting instrument, and, secondly, a technical instrument consisting of both verbal and graphic statements of:

1. The physical and human resources of the County;
2. A statement of the goals sought by the County;
3. Plans for the mobilization of the resources to achieve the goals;
4. Means and methods of approach for implementing the plan.

Florida Statutes 163.190, Section (1) charges the Planning Commission with the preparation of a comprehensive and coordinated general plan for the unincorporated area of the County, based on existing and anticipated needs, showing existing and proposed improvements, and stating principles guiding future development and the manner in which such development is to be controlled. The Plan's general purpose is to accomplish a coordinated, adjusted and harmonious development of an area to best promote public health, safety, comfort, order, appearance, convenience, morals, and the general welfare and which will contribute to efficiency and economy in the development process. The Comprehensive Plan shall include plans for land use and may include plans for transportation, community facilities, a long-range financial program for public improvements, as well as other matters deemed necessary by the Planning Commission and the governing body.

Florida Statute 163.190, Sections (2) and (3), calls for official adoption of all or specifically-designated portions of the land use plan after a duly-noticed public hearing. By an official resolution (Res. No. 72-1) the Land Use Plan was passed by a majority affirmative vote of the total membership of the Planning Commission. All maps, exhibits, descriptive materials and other matters intended by the Planning Commission to form the whole or a part of the comprehensive plan were certified to the governing body, and the officially-adopted copy of the comprehensive plan and any subsequently adopted amendments thereto

shall become a part of the permanent records of the Planning Commission. The Comprehensive Land Use Plan of Palm Beach County became effective upon its adoption by a majority of the membership of the governing body (Board of County Commissioners Res. No. 72-612), on December 6, 1972.

At least once each year, the Land Use Plan or the completed parts thereof shall be reviewed by the Planning Commission to determine whether changes in the amount, kind, or direction of development of the area, or other factors make it beneficial to make additions or amendments to the Plan. If the governing body desires an amendment to the Land Use Plan, it may be on its own motion direct the Planning Commission to prepare via the original adoption procedure such amendment if such amendment be in accordance with the general purposes of the Comprehensive Plan. The Land Use Plan must be continually re-examined and revised as it is the general blueprint for the development of a dynamic, growing and changing community.

A Land Use Plan is a guide for community development rather than an instrument of control. However, Florida Statute 163.195 provides that:

" . . . no street, park, other public way, ground, place, or space, public building or structure not in conformity with the comprehensive plan shall be constructed, adhered or authorized in the area unless the location and extent thereof shall have been submitted to the Planning Commission for a report and its statement of approval of disapproval and the reasons therefor. . . "

Failure of the Planning Commission to act within the prescribed time period shall be deemed an approval of the proposal. The Planning Commission's advisory report may be overruled by a majority vote of the entire membership of the governing body.

The Land Use Plan is the general, long-range advisory recommendation from the Planning Commission reflecting that body's conception of the most desirable use of the land. The adoption of the Land Use Plan by the Planning Commission therefore does not restrict the power of the Board of County Commissioners except to the extent that the enabling legislation requires a recommendation of the Planning Commission to precede legislative action. (2)

After adoption of the Land Use Plan by the governing body, no zoning ordinance, subdivision regulations or code, or supplements or

amendments thereto shall be made without an advisory recommendation from the Planning Commission. In summary, the Comprehensive Land Use Plan recommended by the Land Use Advisory Board and the Planning Commission and adopted by the governing body serves as the rational, logical basis for decision on present and future development of the County as well as the cornerstone for the creation of proper and reasonable land use control regulations which include, but are not limited to, a zoning ordinance, subdivision and platting regulations, limited access regulations, sign and landscape codes and similar legislation.

(2) See Florida Statutes 163.210 and Florida Statutes 163.215 as well as Chapter 70—863, Laws of Florida, Special Acts of 1970.



HISTORICAL PERSPECTIVE

HISTORICAL PERSPECTIVE

Palm Beach County comprises an area of 2578 square miles, of which approximately 156 square miles are incorporated into 37 municipalities. Of the 348,753 estimated population of the County, as of 1970, some 255,051 persons, or seventy-three percent, are municipal residents. The population growth rate for the entire County, including municipalities, during the decade of 1960-70 was a phenomenal fifty-three percent (Fig. 3). These municipalities have their own codes and regulations, controlling density levels and zoning practices within their corporate limits. It is extremely desirable, however, that the County and the municipalities work closely together to establish an organized, reasonable approach to land use which transcends corporate limits. Many of the prime factors determining land use patterns—transportation corridors, water supply, drainage capabilities and natural resources—do not respect governmental boundaries. In the past, County and municipal land uses have often clashed, imposing widely diverse uses along contiguous boundaries. This lack of land-use coordination often results in inadequate transportation facilities, over-demanded drainage capabilities, urban decay, and inadequate health and safety services.

Recent residential development of land in the County has not followed the standard procedure of extending development outward from an existing urban core—i.e. a city expanding its outskirts. In this usual form of developmental expansion, the existing public health, sanitation, water and sewer and related services follow the development in a logical pattern. Development in the County has erupted on a sporadic basis resulting in small clusters of population arising in isolated locations, remote from existing facilities and services. This phenomenon has been the result of an increasing demand for living space within the County coupled with the location of available, less-expensive land for development. New towns, removed from the urban core, require the establishment of completely new agencies and facilities—a more costly and time-consuming process than merely extending existing facilities. This satellite city form of development has also encouraged a proliferation of municipalities, many of them too small to provide their own municipal services. Unplanned growth of this nature ultimately increases the tax burden placed on existing community or County residents to establish new facilities. While the County can obviously not dictate land uses and

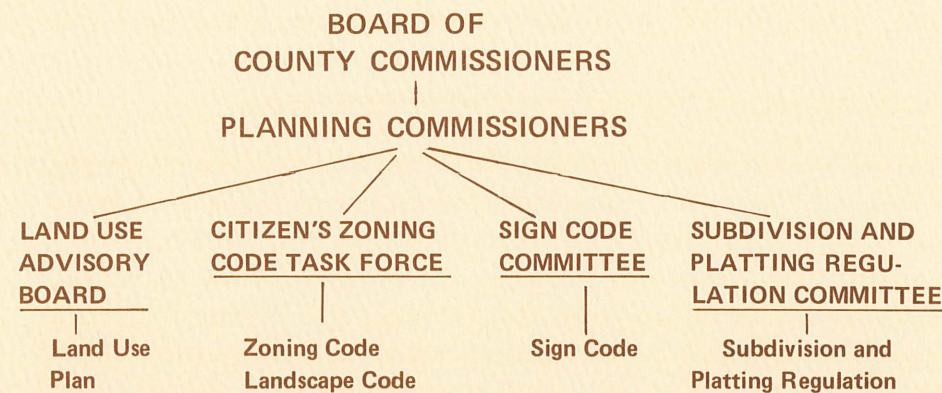
zoning criteria to the municipalities, and vice versa, it is evident that cooperation between the County and the various cities and towns must exist for harmonious land use throughout the entire area.

During the late 1960's, the need for a Land Use Plan was recognized by County officials, but little was done toward the preparation of such a plan. County zoning authorities during this period from January of 1971 to March, 1972, rezoned 14,000 acres of land which, if fully developed, would have added an additional 200,000 persons to the overall County population. Frequently the areas rezoned for substantially higher densities were serviced by over-demanded two-lane highways and inadequate water and sewer facilities. In the face of expansive growth, occurring too rapidly without commensurate increase of supportive facilities such as water, sewer, transportation corridors and public health services, the Palm Beach County Commission declared a one year moratorium on any rezoning within the County. The moratorium went into effect on February 28, 1972. Although no new changes in zoning could be considered, construction value and building permits issued, during the period from February to May 1972, almost doubled over the figures for the previous year. (3)

	Feb.—May 1971	Feb.—May 1972
Construction Value	19,492,266.	35,410,622.
Number of Building Permits Issued for Housing Units	1,216	2,047

The figures indicated that although no new land areas were being opened for residential development, the moratorium had obviously not placed a brake on the fevered rate of construction activity in areas already zoned for residential use. The County Commission then appointed five citizen Boards and Committees composed of knowledgeable, qualified members of the public, to be responsible for developing a land use plan and implementing land use controls to steer the County toward orderly, coordinated growth.

(3) Figures—Palm Beach County Planning, Zoning & Building Dept.



The initial phase of the comprehensive program was the formulation of a land use plan, which would present a pattern of generalized land uses for the County. Following their impanellment by the Board of County Commissioners the fifteen-member Land Use Advisory Board set forth its basic goals and objectives, which included:

- Prevent urban sprawl and dispersed development. . .
- Prevent overcrowding and unmanageable residential densities. . .
- Prevent overburdening ecologically sensitive areas. . .
- Protect natural resources. . .
- Protect ecologically valuable open space. . .
- Protect productive agricultural lands. . .
- Provide residential densities and patterns that are functional and efficiently served. . .
- Provide form and systems to the County urban growth pattern. . .
- Encourage public participation in public policy relating to land development.*

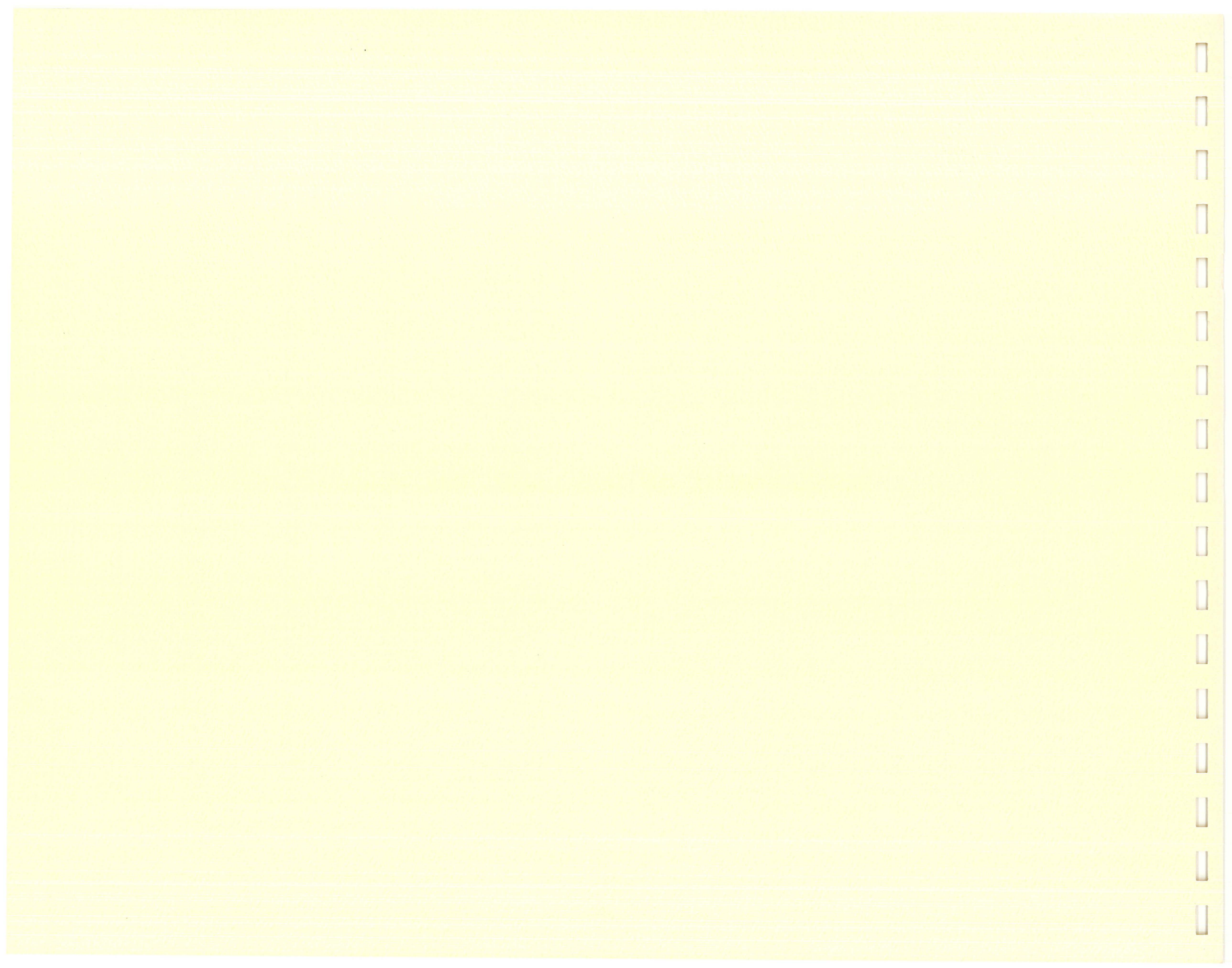
Working with staff assistance from the Palm Beach County Planning, Zoning and Building Department, a plan was produced by the Land Use Advisory Board and offered for the consideration of the Planning Commission. The Plan was approved by the Planning Commission on November 14, 1972. After more than twenty hours of public hearings, the Plan was finally adopted by the Board of County Commissioners on December 6, 1972. A Zoning Ordinance which implements the intent of the Land Use Plan was also recommended by the Planning Commission and adopted by the Board of County Commissioners in December, 1972.

*See Land Use Advisory Board Minutes—May 11, 1972.

FIGURE 3
PALM BEACH COUNTY RATE OF POPULATION GROWTH
1960 — 1970

MUNICIPALITY	1960 POPULATION	1970 POPULATION	1960-1970 PERCENTAGE GROWTH
Atlantis	2	425	1000 +
Belle Glade	11,273	15,949	41.5
Boca Raton	6,961	28,506	309.5
Boynton Beach	10,467	18,115	73.1
Briny Breezes	---	481	---
Cloud Lake	148	136	- 8.1
Delray Beach	12,230	19,366	58.3
Glen Ridge	226	216	- 4.4
Golfview	131	201	53.4
Golf	35	50	42.9
Greenacres	1,026	1,731	68.7
Gulf Stream	176	408	131.8
Haverhill	442	1,034	133.9
Highland Beach	65	40	- 38.5
Hypoluxo	114	336	194.7
Juno Beach	249	747	200.0
Jupiter Inlet Colony	242	396	63.6
Jupiter	1,058	3,136	196.4
Lake Clark Shores	1,297	2,328	79.5
Lake Park	3,589	6,993	94.8
Lake Worth	20,758	23,714	14.2
Lantana	5,021	7,126	41.9
Manalapan	62	205	230.6
Mangonia Park	594	827	39.2
North Palm Beach	2,684	9,035	236.6
Ocean Ridge	209	1,074	413.9
Pahokee	4,709	5,663	20.3
Palm Beach Gardens	1	6,102	1000 +
Palm Beach Shores	885	1,214	37.2
Palm Beach	6,055	9,086	50.1
Palm Springs	2,503	4,340	73.4
Riviera Beach	13,046	21,401	64.0
Royal Palm Beach	11	475	1000 +
South Bay	1,631	2,958	81.4
South Palm Beach	113	188	66.4
Tequesta	199	2,642	277.6
*University Park	13	1,032	1000 +
West Palm Beach	56,208	57,375	2.1
Municipal Total	164,433	255,051	55.0
Unincorporated Area	63,673	93,702	47.0
Total County Growth	228,106	348,753	53.0

*University Park was annexed by the City of Boca Raton on July 27, 1971.



DEVELOPMENT OF THE LAND USE PLAN

DEVELOPMENT OF THE LAND USE PLAN

Development of the Land Use Plan involved isolating all presently developed areas from the remaining vacant unimproved land. Through analysis of existing population data and land use distributions a picture was painted of development to date. (4) Future municipal zoning and planning trends were discussed with city officials. Although Palm Beach County zoning and subdivision regulations do not extend into incorporated municipalities, existing municipal development was considered, as well as assessments of potential development by city officials. Data gathered from various County and State agencies relative to soils, drainage, transportation, economics and other factors influencing the use of land was compiled and analyzed. This data enabled the pinpointing of areas sensitive to overdevelopment where environmental problems might occur, those areas where natural resources essential to the good of the general public should be preserved, and areas conducive to either limited or intensive growth. Types and areas of land use were projected for residential, commercial, agricultural, recreational and open space, and industrial uses in an integrated, compatible arrangement.

The demand for use and development of the land is being intensified by the flow of people into this County—not only the traditional migration from the industrial areas of the North, but recently from Dade and Broward Counties to the South, where readily-developable land is nearly exhausted or publicly-owned. The County population has increased threefold since 1950 to an estimated 375,000 in 1972. As Figure 4 indicates, the figure could triple or even quadruple before the turn of the century. The sources of the data for this illustration are as follows:

Series I—Office of Business Economics and the Environmental Protection Agency

Series II—Urban Land Institute

Series III—Extrapolation of 1950-1970 growth trends

Series IV—Florida Social Sciences Advisory Committee

If the present rate of development continues, ultimate population could well exceed three million people. The population of the County is expanding at a rate of approximately 5%, which presently means 15,000 people-per-year. This is one of the highest growth rates in the nation. The problems of a mushrooming population are numerous, and are not merely limited to the living space required but include all the collateral, community services such as commercial establishments, vehicle and transportation facilities, recreation areas, and utilities. Estimates establish that four or five square miles of vacant land are being developed annually to provide services for support of this growth rate.

As indicated above, a variety of major factors were considered during the preparation of the Land Use Plan. The major considerations are described within the following sections:

Existing Uses of the Land—the patterns that development has taken to date and areas which seem desirable for further location of population.
Natural Resources and Constraints—the effects of water resources, soils, topography, beaches and other natural features: the support they provide for reasonable development and the limitations they place on population concentrations.

Transportation Facilities—existing and proposed transportation programs to delineate desirable corridors and locations.

Economics—evaluation of the nature and degree of industrial and business activity presently existing in the County and predictable increases and decreases in economic endeavor.

(4) See Fold-out map of Existing Land Use in rear cover pocket.

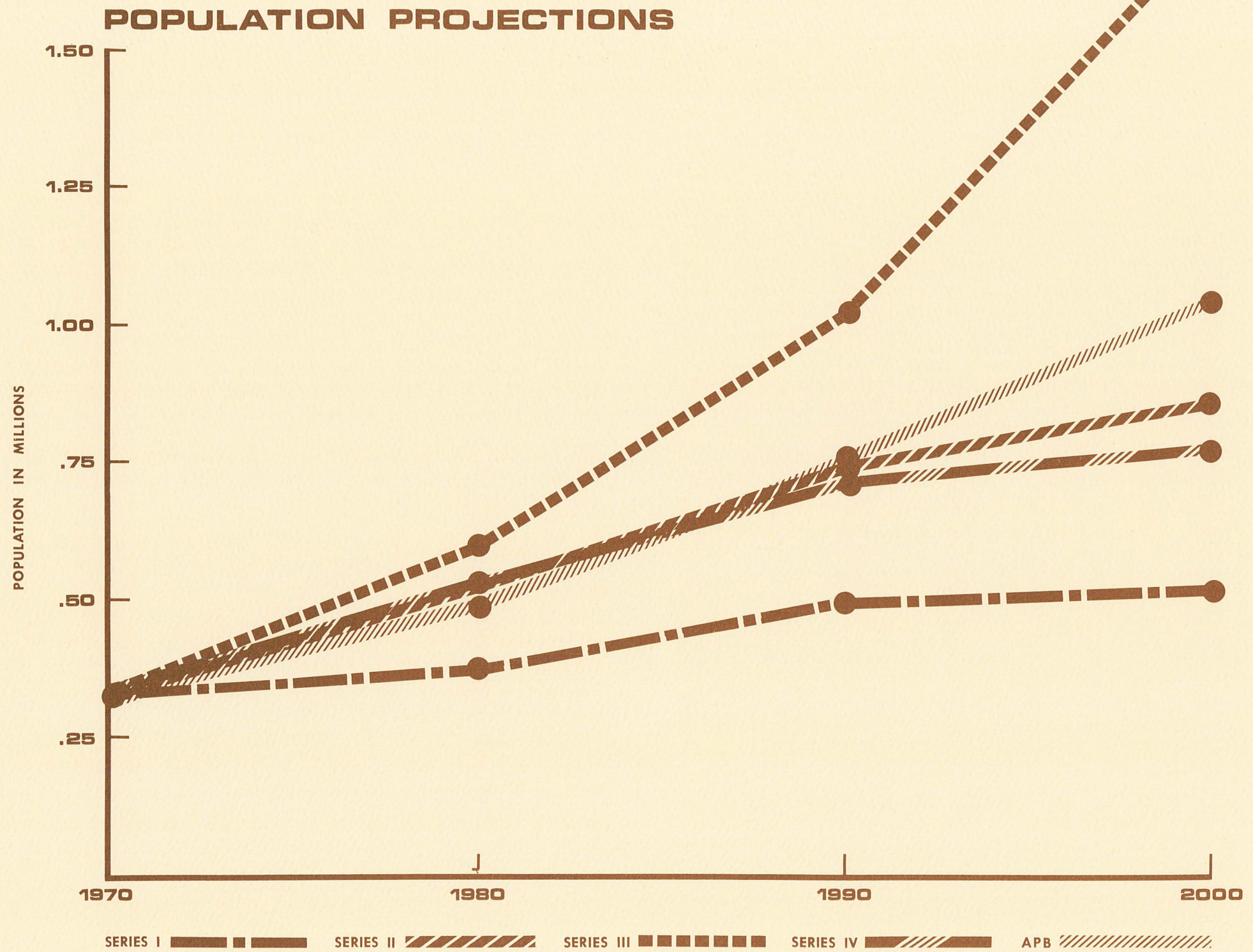


FIG. 4

EXISTING USES OF THE LAND

EXISTING USES OF THE LAND

Existing land use information is of basic importance in formulating a land use plan. Such data depicts area growth patterns and trends including the location and relationship of land uses, residential densities, and the types and proportions of the various land uses. From this information, future land use distribution and needs can be reasonably projected, and areas of unreasonable use located and curtailed.

The existing pattern of the use of land in Palm Beach County is represented in graphic form by the fold-out map titled Existing Land Use which is contained in the rear cover pocket of this text. The implications of the intensity and distribution of use are described in the following sections. As a generalized statement, it may be noted that the comparative relationship of land use in Palm Beach County, (Figures 5 and 6), does not vary significantly from typical urban land use proportions. The County is, as might be assumed, slightly higher in residential and recreational land uses, and lower in commercial and industrial activity, compared to other averages of American communities. Areas of land devoted to dedicated streets and utility rights-of-way are included in each of the urban land use categories. Collectively, streets and rights-of-way account for some thirty-five percent of the total urbanized land area.

The following definitions describe in general terms the existing land use categories in Palm Beach County:

URBAN LAND USES

Residential—Those areas of land where people reside including single-family homes, multi-family housing, and garden apartments. Also included are mobile home parks, tourist accommodations and facilities for transients. Of the one hundred and five square miles in the County presently designated for urban development, forty-three miles, or over forty-one percent is in actual residential land use. An additional twenty-four miles of residentially-zoned area is in streets and utility rights-of-way including transportation routes. Residential land is traditionally the largest consumer of urban lands and directly relates to population and population increase.

Commercial—Includes the wide range of business activity from neighborhood stores and shops to major shopping centers and includes wholesale outlets, professional and business offices,

financial institutions and various service type facilities. Also included in this category are commercial recreational facilities such as bowling alleys. In spite of the expansive definition of this particular use, commercial land designation comprises a comparatively limited 3.5 percent of all urban development and presently represents a total of about 3.7 square miles in Palm Beach County.

Industrial—Industrial land uses include light and heavy industry; fabrication, packaging and processing plants; research and development facilities; warehousing and agricultural-related industry such as sugar mills and refineries. Slightly over two percent of the developed land in the County is in industrial use and represent only about 2.3 square miles. It should be noted that only the developed portion (one mile) of the large Pratt-Whitney tract in the north-central section of the County, which comprises about seven square miles in its entirety, was included in this land use category.

Institutional—Encompasses all lands which are public and semi-public exclusive of non-urban uses such as recreational and conservation areas. Institutional uses include schools, airports, government buildings and facilities, hospitals, cemeteries, religious buildings in addition to various cultural facilities. 8.1 square miles of the County are in institutional use, representing 8.5% of all urban land.

Recreational—Includes largely outdoor recreational uses such as parks, playgrounds, playfields, golf courses and public beaches. Marinas having no repair facilities are included in this category. Golf courses, alone, represent almost two-thirds of the entire land in recreational use. At present, 11.7 square miles of the County 12.3 percent of all urban development is in recreational use.

NON-URBAN LAND USES:

Agricultural—Agricultural land use is one of the most important utilizations of land in Palm Beach County since, in its entirety, it represents approximately 950 square miles of land. This includes approximately 47 percent of all the land area of the County. Included in this category is land used for vegetable crops, citrus groves, flowers, beef and dairy pasture and, most importantly, sugar

URBAN LAND USE DISTRIBUTIONS - EXISTING

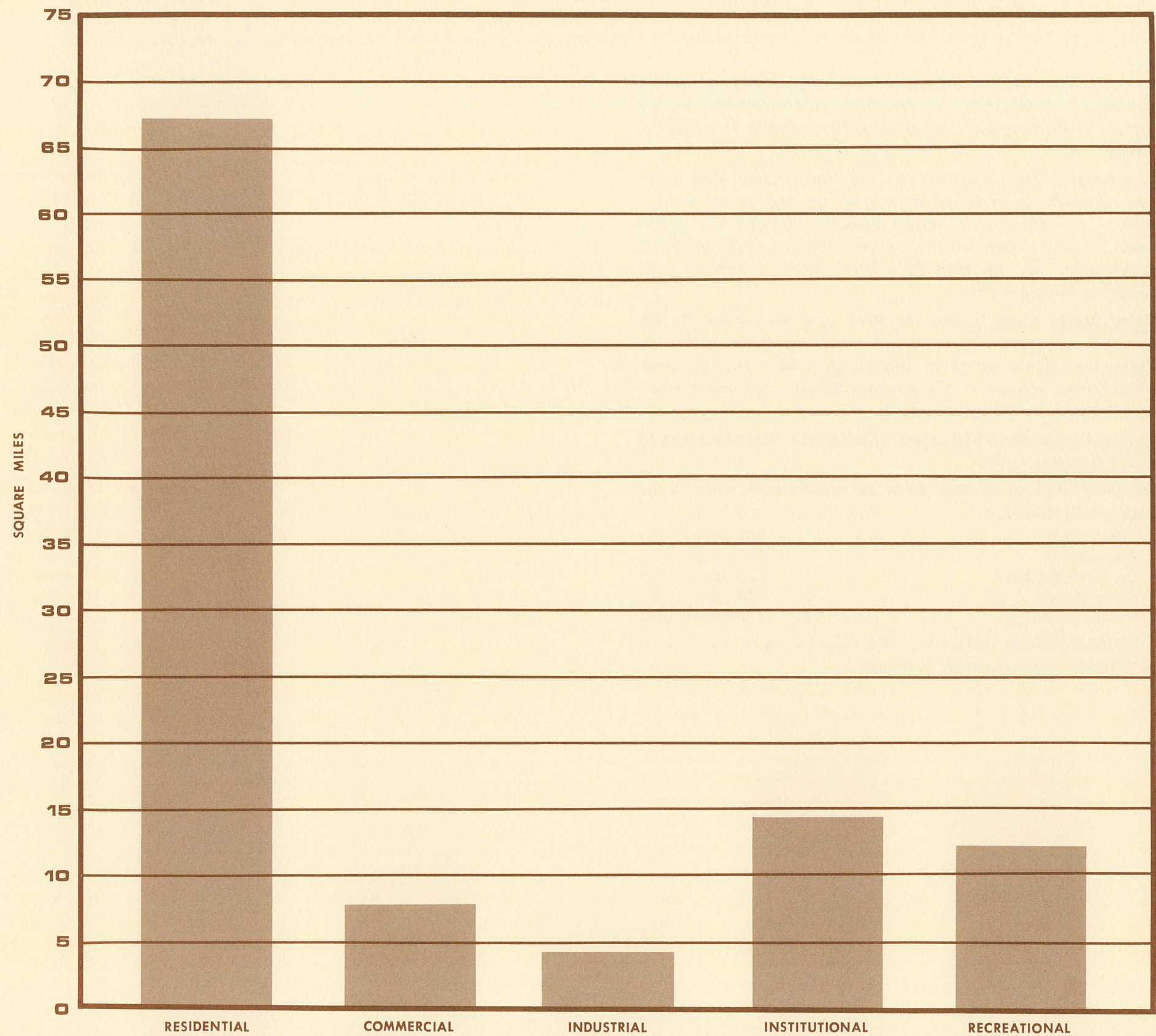


FIG. 5

cane. It is estimated that the amount of County land being put into agricultural development is increasing proportionately to the increase in urban land uses, which is highly unusual in an urbanizing county.

Conservation Areas—There are two major conservation areas in the County which are protected from urban use and are utilized for outdoor recreation on a limited basis, representing 272 square miles. The J. W. Corbett Wildlife Area includes an additional 187.5 square miles, and the West Palm Beach Water Catchment Area comprises 19 square miles.

Water Bodies—Water bodies represent over ten percent of the County's total area. The section of Lake Okeechobee which lies within the County comprises 246 square miles alone. All other water bodies, outside of the aforementioned conservation areas, constitute another 20 square miles.

Vacant—Of the total 2578 square miles in Palm Beach County 878 square miles are vacant.

The distribution of existing urban and non-urban land uses in the County is as follows:

Urban Land	105 square miles
Agricultural	950 square miles
Conservation Areas	479 square miles
Water Bodies	266 square miles
Vacant Land	778 square miles

Detailed findings and general recommendations relative to each of the land use categories are as follows:

URBAN AND NON-URBAN LAND USE - EXISTING

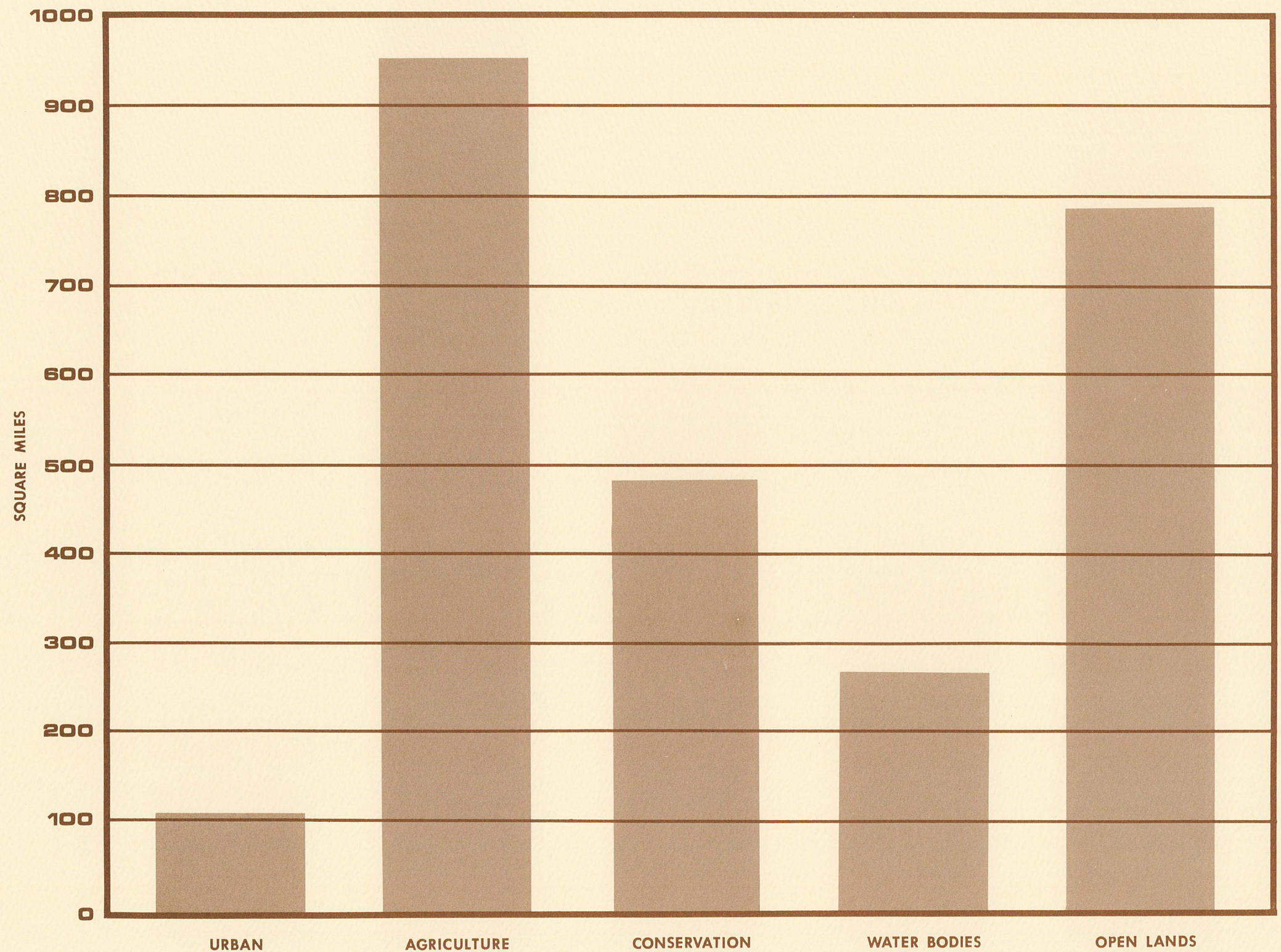


FIG. 6

DESCRIPTION OF LAND USE PLAN CATEGORIES

DESCRIPTION OF LAND USE PLAN CATAGORIES

RESIDENTIAL—Coastal and Interior

As indicated by the fold-out Map of Existing Land Use, the majority of the intensive residential development is located in the eastern, or coastal section of the County—i.e. that land area lying between the Atlantic Ocean and the Sunshine State Parkway, and between the north and south County boundaries. This area has taken on the appearance of a stereotyped day-dream of South Florida—high-rise condominiums and apartment buildings overlooking palm-lined beaches and the blue Atlantic. The majority of the thirty-seven county municipalities are located in this coastal strip—thirty-three coastal municipalities occupying one hundred forty-three square miles of land, and including a total population of approximately 230,000. Another eighty-six thousand persons reside in the unincorporated coastal section of the County, concentrated on forty-seven square miles of the seventy-one square miles presently zoned for residential development. The coastal area with its recreational amenities (golf courses, the Atlantic and Intracoastal area), has been the traditional location of high residential development for the County. The major non-agricultural industrial activity is also located in this strip.

The coastal strip can be anticipated to continue as the major area for growth in the County for some years to come, and this trend is provided for in the Land Use Plan. This entire area of the County is shown for urban, predominantly residential land uses. Indeed, development is occurring in the area between Lake Worth Road on the north and the southern County boundary, the Hillsboro Canal, at a phenomenal rate. This large area of land, much of which is presently zoned for agricultural purposes, is the key to the future development of the County. Areas which had previously been productive farm lands are being purchased at high prices for development as medium and high density residential centers. Particular care will need to be taken to insure that public services (drainage, water supply, transportation) are adequate to support a rapidly burgeoning population in this area as well as County-wide. Coordination between the County and officials of the south coastal municipalities—all of which are also experiencing a rapid rate of growth—should be particularly well-considered and closely planned.

The interior section of the County—or that area lying west of the Sunshine State Parkway and east of the L-8 Canal, excluding the two

large conservation areas—comprises 261.32 square miles. Only 5.91 square miles are incorporated, as the Village of Royal Palm Beach. Two hundred and fourteen square miles are presently zoned Agricultural and exist as land vacant of development, along with forty-five miles of additional vacant area. Seventeen square miles are devoted to residential development projects either planned or already under construction. The Village of Royal Palm Beach comprises a population of four hundred seventy-five, with an additional six thousand, nine hundred persons living in the unincorporated portion of this mid-sector of the County.

Development can be expected to intensify in the southern section of this interior portion of the County, as it moves inland from the coastal area. The Land Use Plan shows an estate use to accommodate gradual, orderly development of this area. Much of this land is productive agricultural land, however, and should remain zoned as such until farming is no longer a reasonable use of the land.

An ultimate population for the coastal and interior sections was projected, based on zoning densities existing at the time the moratorium was put into effect. A figure of 2.6 (5) persons per dwelling unit was used to convert numbers of dwelling units into numbers of persons. This figure of 3,258,798 would need to be increased by 1,250,000 to accommodate projected ultimate populations in the municipalities. Therefore, existing zoning densities—County and municipal combined—would allow a population of 4,508,798 east of the Glades. As is pointed out in the section entitled Natural Resources and Constraints, neither the supply of water nor the drainage capabilities of this County's system of primary canals is capable of servicing this number of people.

The fold-out Land Use Plan included in the pocket on the rear cover of this text includes residential densities which will allow for a population of approximately three million persons. This figure is in excess of the estimated water supply and drainage capabilities presently available in the County. It was so set in anticipation that canal improvements and increased water retention facilities might bring the servicable population to somewhere near the two million figure by the time the County population in fact approaches that mark. The Plan is subject to adjustment allowing an increased or decreased ultimate population as the ability of the critical resources to service that population either increases or decreases.

Recommendations for Coastal and Interior Residential Use

All residential development of high density should be limited to

the coastal ridge or selective waterfront areas and should not encroach on environmentally sensitive areas inland.

All residential development of medium density should be limited to the area east of the Sunshine State Parkway, and exclusive of areas designated as agricultural land use.

All residential developments of low and estate density should be confined east of the northern strip of conservation area No. 1.

The Planned Unit Development concept should be the primary vehicle utilized for large tract development.

Site development plans should be required for approval of all residential construction projects in excess of ten units per acre.

Densities recommended for the various residential land uses as they are employed in the Plan are as follows:

	Standard Subdivision	Planned Unit Development
Estate	1 Unit/2½ acres	1 unit per 1 acre
Low	4 units/acre	6 units/acre
Medium	7 units/acre	12 units/acre
High	15 units/acre	18 units/acre

(5)The present average number of persons per dwelling unit in Palm Beach County.

RESIDENTIAL—Glades

The pattern of land use in the Glades is dictated by widespread agricultural use of the area. Agriculture supports the area's economy to a degree almost excluding other activity. The urbanized area exists in support of the agricultural economy rather than being economically self-sufficient. Owing to the dominant shadow cast by agriculture on land use in the Glades, it is impossible to eliminate agricultural activity from considerations of urban land use in this area. Some seven hundred and fifty square miles are in some form of agricultural development and another eleven hundred and fifty square miles are vacant including six hundred and forty-four square miles of conservation areas.

In 1970 approximately 25,000 people were living in about 9.3 square miles including the three Glades communities of Belle Glade, Pahokee and South Bay and adjacent unincorporated residential areas. This figure is somewhat variable as it fluctuates based on the numbers of migrant

laborers working crops in the Glades at any given point in time. The development pattern of both the Belle Glade and South Bay areas, like many Florida communities, has been strongly influenced by the State's subdivision of land into grids by sections, and by transportation routes traversing the area. Pahokee's development configuration reflects its relationship to Lake Okeechobee's shoreline and to the area's principal highway (Rt. 715) with linear type growth along both. It is anticipated that there will be continuing development in and around the Glades communities of Belle Glade, Pahokee and South Bay and other adjacent unincorporated areas. This growth zone has been designated by an "urban line" in the graphic Land Use Plan with residential densities projected at estate and low. Extending around Lake Okeechobee from Martin County in the north to Hendry County in the west, the band is narrow and attempts to confine and limit urban development to areas adjacent to existing urbanization and to prevent "leapfrog" development. It is felt that within this limit there is adequate space for all anticipated urban growth. A detailed functional arrangement of land uses within this area for housing, commerce, industry and public use will have to be evaluated and periodically updated through joint effort by both community and County officials based on the overall development guide suggested by the County Land Use Plan and local municipal plans. The primary characteristic of land development in the Glades reflects the extreme competition between agriculture and urban land uses. This, because of the very high productivity of the rich organic soil, is a battle in which agriculture appears to be the dominant force. Urban development is relatively compact and concentrated and urban sprawl minimized, as growth patterns have not only responded to the value of agricultural land but other constraints such as soil conditions, the cost of extending utilities, and land ownership patterns. Fundamentally, this is a desirable growth pattern, and it is hoped future development will respond to these restraints in a similar manner.

One of the implications of concentrated growth in the Glades area calls for more care in the planning and allocation of land uses because of potential conflicts between residential areas and other industrial zones and transportation facilities. Problems of proximity of differing land uses can certainly be minimized through utilization of basic planning principles. If compact growth is to be realized, the following land use recommendations should be considered regarding the Glades area:

Recommendations For Glades Residential Use

Designation of permanent open space (parks and playgrounds) within the urbanizing area to assure proper buffering and separation of certain land uses. There are presently some areas of agriculture land inside the urban area which serve this function, but in time, there will be pressure on this land to develop. The agricultural industry itself will require more land for supporting urban activities. Open space in itself tends to bolster adjacent residential values.

Utilize or permit, in selected areas, higher residential densities. Multi-family development is easier to provide services to and conserves land. Because of land cost and construction requirements due to soil condition more multi-family zoning is justifiable.

Relate residential densities to business and employment areas via direct access to arterial roads while minimizing congestion from through traffic. Because the area is subjected to much "through" traffic this will be a continuing consideration and may give rise to the concept of a by-pass highway (particularly as it relates to Belle Glade).

The land south of Lake Okeechobee and east of State Road 7, west of Hendry and south to the Broward County line is amenable to agricultural usage and should be maintained as such, even though farming is conducted on a limited basis at the present time.

If sugar refineries are located in the Glades area in the future, this will necessitate additional housing for refinery workers. Construction of this housing should be handled as special exceptions in agricultural zoning districts.

COMMERCIAL

The majority of existing commercial activity is concentrated in the intensively developed coastal strip.

The physical character of urban Palm Beach County, relative to street and road patterns and historical zoning district designations has followed the standard grid pattern for many years. As a result certain major arterial streets developed as commercial centers, lined with shops, offices and businesses. Too often these roads did not provide proper ingress and egress from the major arterials to facilitate the flow of traffic to the businesses themselves. The roads became increasingly congested with traffic since the flow was continually being interrupted to allow individual autos to enter and exit the traffic pattern. With the advent of the regional shopping center much of the commercial activity moved

outside the center city areas, enticed by less-congested traffic corridors, adequate parking and a high concentration of shops in a mall-type area. The downtown business sections of the major coastal municipalities are still productive, and concentrations of land population are still available to patronize these areas. Transportation to and from downtown business districts, as well as parking facilities, will need to be improved in many cases to compete with the attractive new shopping centers springing up in suburban areas.

Recommendations for Commercial Use

No further strip commercial zoning should be encouraged and parallel access should be provided for any existing areas of stripped commercial activity.

Future commercial development should take the form of centers of neighborhood, community or regional dimensions, and should be located at points easily accessible to nearby residential developments. Any commercial development of community size or larger should be located on a large tract along one, or at most, two sides of intersecting major arterials. Such a development should not be split across four corners of an intersection, as ingress and egress from the traffic flow becomes greatly confused and impeded. Any such proposed commercial center should submit a detailed site plan showing adequate egress and ingress, parking availability, and limited access proposals.

As the southeastern coastal section of the County further experiences the development already underway, the intersections of Military Trail and the major east-west routes bisecting it (Germantown Road, Boynton Road, Glades Road, etc.) seem well suited to the localized form of commercial development. Interchanges of the major expressways such as the Sunshine State Parkway and I-95 are also considered favorable locations for limited commercial development such as service stations, restaurants and motels, and those facilities which would normally service travellers. Future commercial centers denoted on the land use map by red circles are not intended to pinpoint specific locations but only to note generalized areas where commercial facilities will be warranted as development continues.

A regional shopping center will be indicated in the urbanizing section of the Glades when the population reaches the 70,000 level.

INDUSTRIAL

Industrial activity is one of the three major contributors to the econo-

my of Palm Beach County. The past decade has seen a rise in industrial construction and employment, and the expansion of "clean" industry should be encouraged, since its fellow economic contributors—tourism and agriculture—may be expected to peak and begin to wane in coming years.

The earliest industrial activity in the County took the form of strip zoning along major highways such as US 1 and Okeechobee Boulevard and along railway facilities which were the major shipping and receiving arteries for the County. More recent development has implemented the concept of industrial parks, which takes the form of several industrial concerns sharing a comparatively large tract of land, generally located in a non-residential area and easily accessible to major thoroughfare routes. These industrial centers are largely located in the coastal, urbanized section of the County—not immediately adjacent, but easily accessible, to residential and commercial areas of distribution. The type of industries occupying these parks are the research-oriented, component-assembly variety and they generally employ technically-trained persons at relatively high salaries. These industries generate large tax revenue bases as well as providing technical employment opportunities for County residents.

The major industrial concern in this County at the present time is the Pratt-Whitney facility, occupying a seven mile tract, of which approximately fifteen percent is developed into actual industrial use. Other major industrial firms in the County include IBM in Boca Raton, ITT in West Palm Beach Solitron in Riviera Beach and DCA in Boynton Beach.

Recommendations for Industrial Use

Industrial expansion should be on a selective basis and limited to suitable areas.

Industrial areas should be protected from non-compatible land uses through exclusive zoning and open space buffer areas to minimize friction with adjacent land uses, particularly residential.

Industries should be encouraged to locate near existing major transportation facilities such as expressways and rail lines. Use of residential streets for industrial transportation should be avoided.

Industrial parks with attendant urban services (water, sewer, sanitation, fire protection, etc.) should be encouraged as an alternative to spot or strip location of industrial concerns.

Planned business-industrial parks should create a landscaped,

open space-oriented working environment to accommodate changes in attitude of contemporary working people and employers.

INSTITUTIONAL

This land use classification includes the facilities necessary for municipal, County, State and Federal offices to perform their mandated functions—schools, airports, office buildings, courts and prisons, etc.—as well as medical, cultural and religious facilities. The location of various institutional structures—municipal buildings, schools, churches, courts and prisons—are presently scattered throughout the residential and commercial areas of the County as well as in the urbanized area of the Glades.

Recommendations for Institutional Use

Although different branches or subdivisions of government require separate areas to discharge their functions, it is recommended that wherever feasible, governmental activities be centered in complexes rather than isolated locations. These complexes should be located near to, but should not surround residential sectors, due to the high degree of traffic they generate. Careful consideration should be given to the location of future institutional structures which generate great amounts of traffic or emanate appreciable noise or odor to insure that they will be adequately buffered from adjacent residential areas.

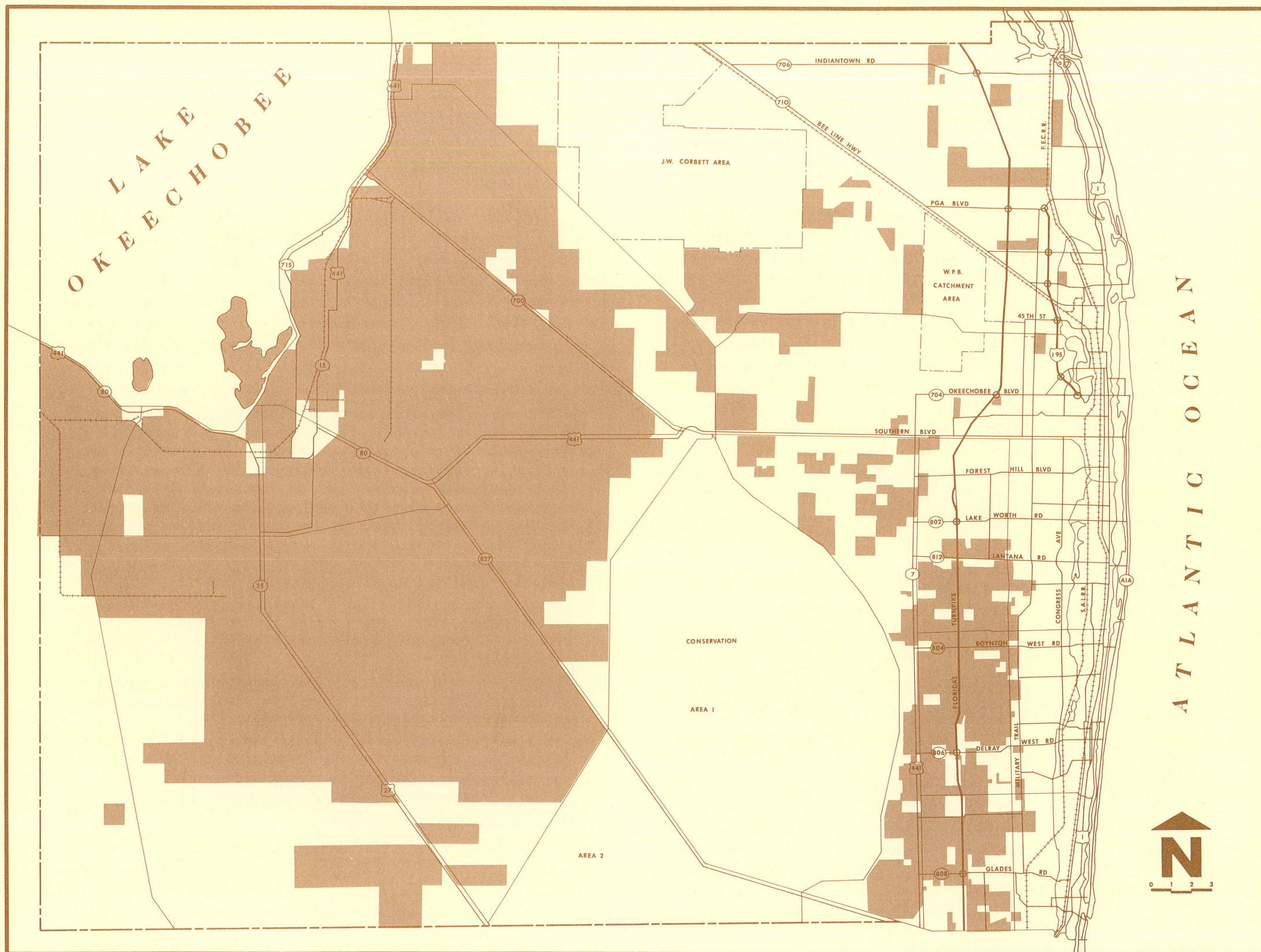
Any proposed construction of medical or cultural centers of service should be located near major transportation corridors, where they will not cause clogging of residential streets or dislocation of normal traffic patterns.

Coordination of space needs and planning aims among the various governmental agencies in the County should result in more efficient and economical use of institutional land.

A community facilities planning program should be undertaken to apply professional planning principles to the determination of need, acquisition of land, and development of institutional services for the County; so that these services may be developed in the most efficient and economical manner.

AGRICULTURAL

Agriculture has been a formidable contributor to the County economy throughout its development and is anticipated to remain so in the



AGRICULTURAL LANDS

FIG. 7

foreseeable future. It is the basis for almost all economic activity in the Glades area and plays a significant role in the economic structure of the eastern portion of the County, particularly the south-coastal area.

A vast land mass representing almost a thousand square miles of land—640,000 acres—is presently devoted to agricultural activity (figure 7). The major portion of this area is in some form of agricultural use; the soil is a rich, organic muck which supports intense cultivation with minimal treatment. Figure 8 details the acreage devoted to major crops during the period 1949-69. Vegetables, in particular winter vegetables for export to Northern markets, are and have been traditionally the largest income producer in the sector (\$112,300, 546 in 1971-72). The largest vegetable crops are beans, corn, celery and tomatoes. Citrus fruits, also largely exported to Northern markets, are another major product. Sugar cane, almost a dead economic issue, was brought to life as a result of the embargo of Cuban sugar enacted in the early 1960's. The new crop (cane) was easily absorbed into the cultivation pattern of the area utilizing previously unused land. In 1971-72, the cane crop produced a dollar value of \$107,903,788. Figure 9 depicts the dollar value of major crops in the County.

One of the primary Land Use Plan goals is to protect productive agricultural land, as it is one of the mainstays of the County economy and is, to an extent, a constraint on urban sprawl. A pure agricultural zone is suggested by the Plan and implemented through the Zoning Code. This means that land zoned as agricultural will only permit development of an agricultural nature. This concept has latitude to allow farm-related housing and agricultural-oriented industry. It is anticipated that agriculture will become more mechanized and automated in planting, harvesting, processing and packing procedures and, in places, will eventually require an almost agricultural-industrial type use of land. The Plan, within agricultural zones, should accommodate such needs as they arise. As reflected in the new Palm Beach County Zoning Code, the agricultural district no longer treats farm lands as a holding zone for residential development, and conversion to other land uses will require a re-zoning or special exception approval. The value of agricultural land, and limited soil conditions existing in much of the western portion of the County, indicate extensive urban use of land in the Glades is not to be expected in the foreseeable future.

In sum, agriculture and related activities have expanded to the point

FIGURE 8

ACRES DEVOTED TO MAJOR CROPS 1940-69

	1940	1945	1954	1959	1964	1969
Beans	38,768	65,264	32,968	18,724	17,021	11,433
Cabbage	3,054	4,542	2,248	3,687		
Celery	941	4,316	3,952	7,950		
Peas	4,567	2,298				
Tomatoes	7,197	2,702	1,894	2,104	4,286	3,492
Corn	201	761	17,352	24,223	32,323	35,417
Sugar Cane	12	360	130	25	117,500	

Sources: U.S. Census of Population and Agriculture.

FIGURE 9

AGRICULTURAL PRODUCTION IN PALM BEACH COUNTY

CROP	1969-70	1970-71	1971-72
Beef	7,540,000	8,176,100	11,160,000
Dairy	9,814,504	9,053,832	13,630,224
Sod	7,850,000	9,120,200	10,100,000
Flowers	7,920,000	8,240,420	8,050,000
Ornamentals	4,100,000	4,780,610	6,100,000
Citrus & Tropical fruit	4,200,000	4,672,150	5,100,000
Sugar	80,175,418	100,737,026	107,903,788
Vegetables	83,784,414	91,854,178	112,300,546
TOTAL	\$205,439,134	\$236,634,507	\$274,344,558

Source: County Agricultural Extension Service

where they may be well regarded as the single most important land use in the County economy and must be given protection. The following recommendations are made toward the preservation of the County's agricultural activity:

Recommendations for Agricultural Use

Maintain agricultural property tax assessments at minimum levels and consider reduction of the tax mileage rate in areas where agricultural and urban land use abut.

In productive agricultural areas water management policy should be directed toward accommodating such lands, such as maintaining high water tables where feasible.

Recognition that the incredibly rich and productive organic soil south of Lake Okeechobee, the world's largest muck deposit (over 1000 sq. mi.), is a non-renewable resource, and all efforts should be made to minimize its depletion through oxidation—a process which causes decomposition of the soil and occurs when the soil is drained and exposed to the air. Although this complex and highly debated problem will not have a negative effect on agricultural productivity in the foreseeable future, it is a subject that demands continuing study and evaluation. The eventual disposition of this problem will affect not only agricultural use of land but the Everglades areas to the south, as both are dependent on water control properties of the muck land.

Living quarters to domicile migrant workers should be considered for zoning purposes as a special exception in the agricultural zoning district, rather than spot zoning incidents.

As areas are no longer usable for agriculture use they should be converted to an estate type of usage, rather than a higher residential density in order to minimize the transitional effects on the surrounding ecology.

CONSERVATION

The element of preservation and conservation has been given particular emphasis in this Land Use Plan. The approach taken by the staff planners for the first time has been to apply the techniques of modern planning research to delineate and justify the identification of critical environmental areas directly in the Land Use Plan.

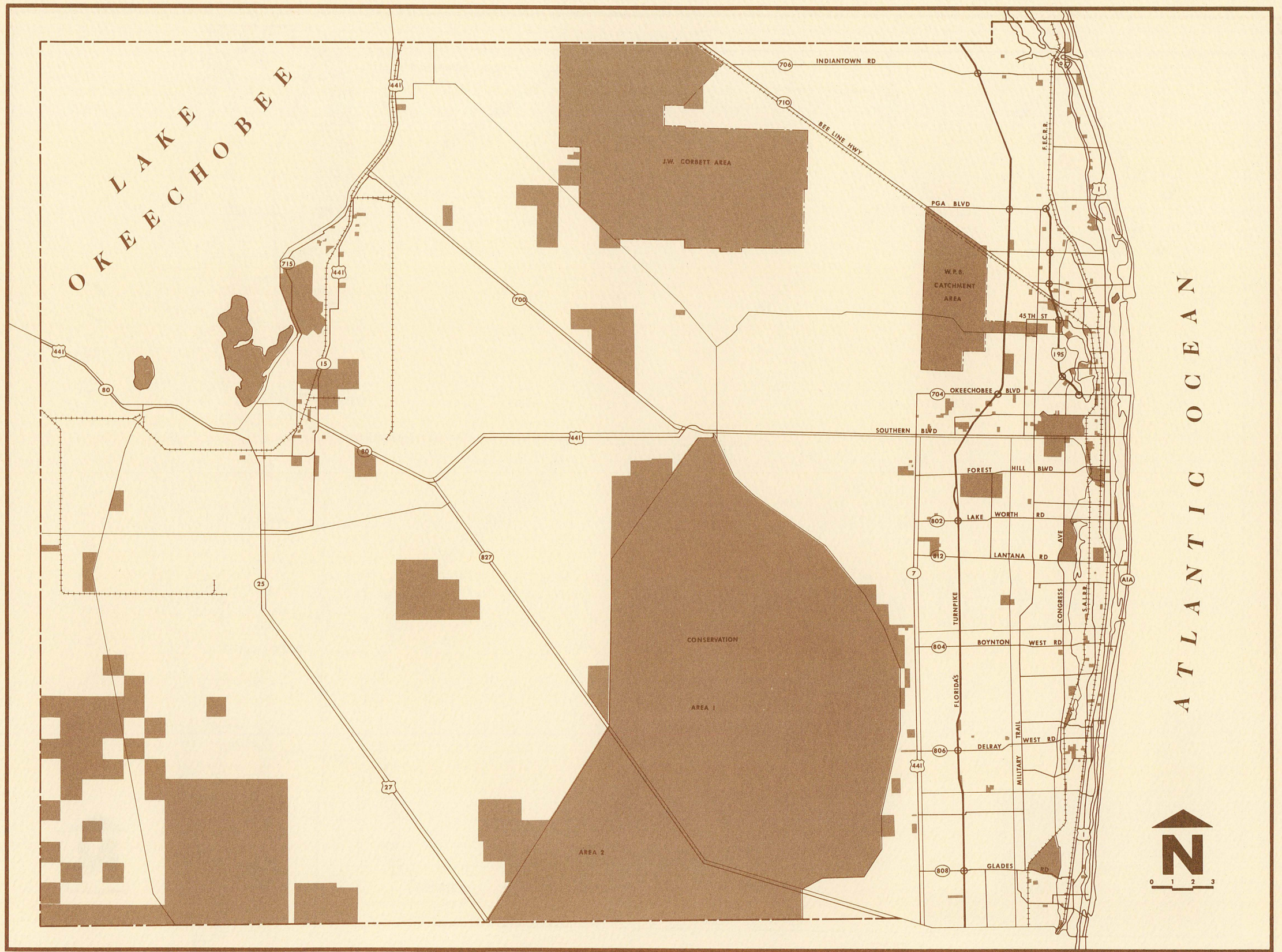
The Palm Beach County planning staff applied the techniques of the State of Florida's Coastal Coordinating Council by using published data relating to soils, drainage, vegetation, and current ownership patterns.

Maps were prepared showing wildlife habitats, especially those of endangered species with the aid of conservation and wildlife-oriented groups. The habitat maps were combined into a master overlay which was superimposed on a map depicting public land ownership. The areas where the public land and habitat maps did not overlap were proposed for preservation and conservation zoning. It was possible for the first time to delineate zones for preservation based on empirical research in advance of development, not in reaction to it.

Palm Beach County is fortunate in having thirty percent of its surface area in various forms of public ownership (Fig. 10). This figure includes several large parcels such as the J. W. Corbett Wildlife Management area, the Water Conservation Areas 1 and 2, the Water Catchment Area owned by the City of West Palm Beach, and approximately four townships of land owned by the State of Florida. Although conservation of wildlife is not practiced in all public land areas, at least the potential exists if various governmental agencies can be made responsive to the need to preserve the environment. Public ownership of critical environmental areas is, therefore, an emphatic recommendation of the Palm Beach County Land Use Plan.

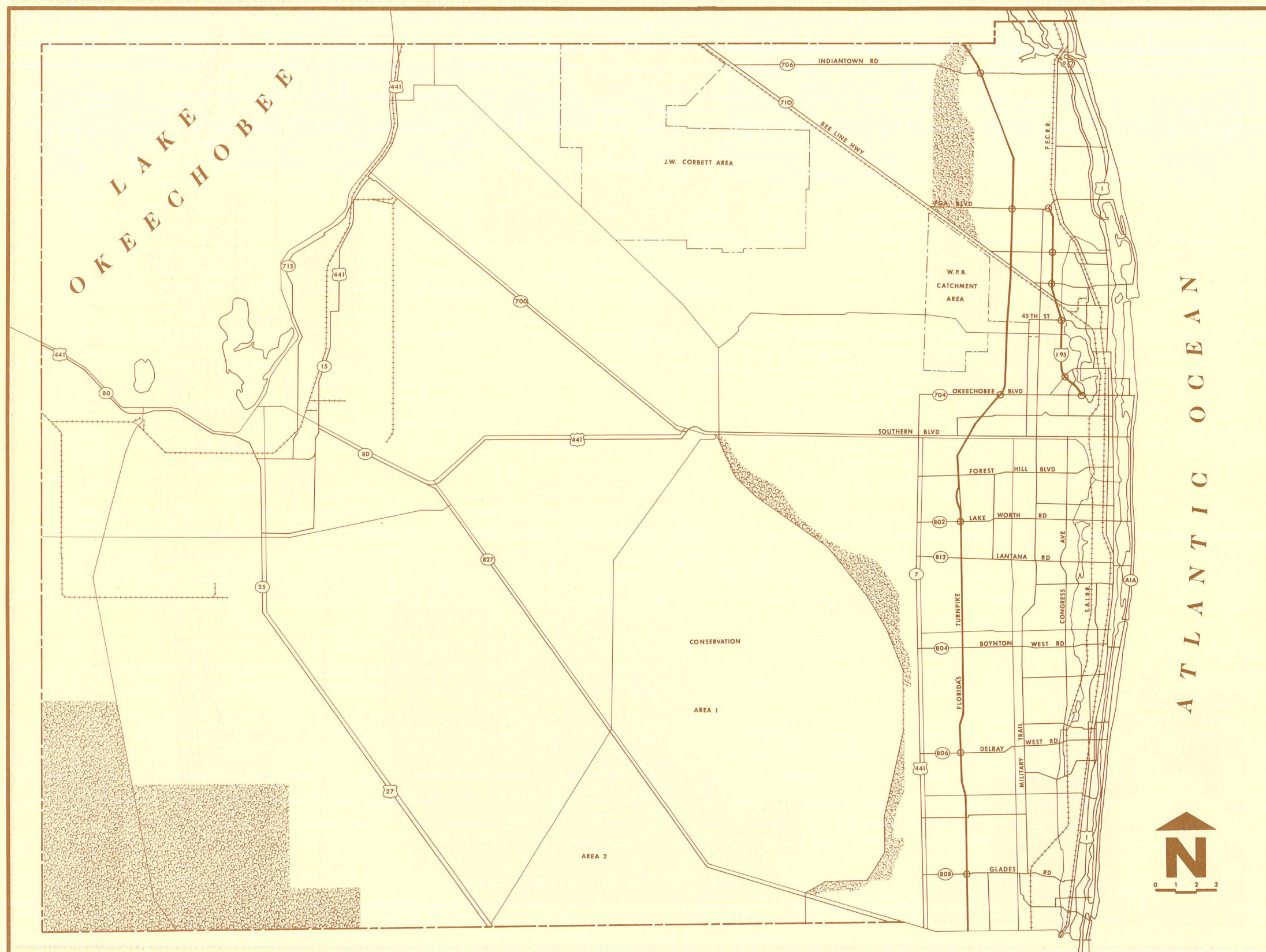
In the southwestern section of the County an extensive amount of land has been designated for acquisition as a conservation area (Fig. 11). This is a significant portion of Florida's remaining natural sawgrass and serves now as an unprotected wildlife area. The land abuts Broward County's Conservation Area 3 and is also critical to the ecology of that preserve. Any other use of the area would require drainage and altering the land, an action not in the best environmental interests of Southern Florida. A fringe surrounding Conservation Area 1 as well as the area in the northeastern section of the county known as the Loxahatchee Slough have also been designated for future public acquisition (Fig. 11). The State of Florida through the Coastal Coordinating Council has designated this area as one of the areas of "critical environmental concern". This view is supported by the Central and South Florida Flood Control District and the majority of the Land Use Advisory Board, and by many staff agencies in the State government.

Sufficient land exists to permit desirable, reasonable growth within the County and still provide for preservation of environmentally sensitive lands, valuable not only for preservation of wildlife habitats but also as water recharge areas.



PUBLIC OWNERSHIP

FIG. 10



Recommendations For Conservation Use

Any construction between existing dunes and Lake Worth should be on pilings down to bedrock for structural support and reinforcement of existing sand formations. No renovation of existing dunes or removal of vegetation is recommended.

Funds from State programs are available for purchase of environmentally endangered or sensitive lands, and the County should make every effort to reserve available State funds for purchase and preservation of these areas within its boundaries.

Funds should be extended for purchase and preservation of the various sites identified as being historically and culturally valuable including four mounds containing artifacts of the Pre-Columbian Indian civilization. Efforts should be made to have these sites identified as historically valuable in the National Registry of Historical Sites. (Existing remnants of the Celestial Railway the early transportation line which opened shipping and commercial travel corridors within the County are being identified and pursued by the owner/developer of the property.)

The program of the State of Florida, Department of Natural Resources, to exchange publicly-owned productive agriculture lands for privately-held lands suitable for creation of a soil conservation area should be pursued.

Close coordination should be continued with public and private, conservation-oriented, agencies and organizations on matters related to private development and public activity in and around environmentally-critical areas.

All future land use actions by any agency should be evaluated for its potential impact on the overall environmental objectives of this Plan.

RECREATION, OPEN SPACE AND WATER BODIES

Setting aside a certain percentage of land to provide open space area is essential to a balanced land use plan for several reasons. First, open space provides sound buffers to reduce the decibel level between residential and noisy industrial areas as, for example, in the open land surrounding the Pratt-Whitney testing facility in the northeast section of the County. Undeveloped areas also aid in the reduction of air pollution by facilitating natural oxygen/carbon dioxide cycles. Areas of open space provide aesthetic variety to what might otherwise be unbroken subdivisions and allow opportunity for recreational activities for the inhabitants of the subdivisions. These areas also preserve natural

environmental features such as water supplies, wild-life habitats, and provide plant life and open lands essential to Man's existence.

Outdoor recreations is, because of the South Florida climate, one of the County's prime amenities. This is confirmed by tourist interest in the area and the influx of new residents to the County stating climatic and recreational considerations as influential in their decision to relocate. Obviously, as population increases, the demand for recreational facilities and open space will increase. Development of recreational facilities will need to keep pace with the increasing need for facilities to be used by residents and tourists alike. A general formula of ten acres of accessible parks, playgrounds and playfields per thousand residents is regarded as a desirable standard for a community or county. It is recommended that this standard, formulated by the National Park and Recreation and Open Space Association, be endorsed by Palm Beach County. If this standard is applied to present population figures, a forty percent deficit is revealed. For a population of 350,000 persons, 3,500 acres of developed outdoor recreation area should be available. Presently 2,033 acres are available for public recreation in the County, of which 1,500 acres are in County parks and 500 acres in municipal facilities. Therefore, although the municipalities include 71% of the total County population they account for only 21% of the developed recreational facilities. Further efforts are needed to identify recreational areas of adequate size in desirable locations for public acquisition in advance of urban growth.

The Everglades area is a unique national refuge for wildlife providing unparalleled scenic and recreational opportunity for residents and visitors. Their ecological value is beyond assessment. A portion of the Glades is now in undeveloped open space and this land in aggregate represents, including Lake Okeechobee and other water bodies, approximately twenty percent of the land of the County. This area includes Conservation Areas 1 and 2 and the J. W. Corbett Wildlife Management Area. The remaining County open space is represented by the West Palm Beach Water Catchment Area and Lake Worth and comprises only an additional one percent open space. The Central and Southern Florida Flood Control District assumes water management responsibility of South Florida's Conservation Areas 1 and 2, as represented on the fold-out map of Existing Land Use. Management of wildlife and public recreation in Conservation Area 2 is transferred, by a

lease agreement, to the U.S. Department of Interior's Fish and Wildlife Service. This Area is commonly known as the Loxahatchee Recreation Area. Wildlife management in Conservation Area 2 is a responsibility of the Florida Game and Fresh Water Fish Commission, whose objectives are to remove flood water, store surplus water, prevent overdrainage and salt water intrusion, protect developed areas, improve navigation, recharge ground water supplies and conserve fish and wildlife. All of Conservation Area 1 is in Palm Beach County as well as a good portion of Area 2, and together they comprise 271 square miles. These areas attract many tourists, naturalists, fishermen and hunters to the limited facilities offered at various sites designed especially for such groups. Although some areas of the Everglades have been lost to agricultural activity and urbanization, and although the area is continually threatened by drought, fire and man's activities, a good deal of the Glades' uniqueness and integrity remains and should be preserved.

Clearly, an important Land Use Plan objective must be to preserve and protect the Everglades and, if possible, add to the County open space resources through acquisition of additional open lands and formally preserving existing public tracts. Justification for this action is both economic as well as environmental, for the County's economy is directly tied to open space recreation, both resident and tourist uses.

As expansion of the agricultural industry continues to spur growth in the Glades area, coupled with continued development of the coastal area of the County, the demand on Lake Okeechobee for recreational facilities will increase. The Lake is the second largest body of fresh water in the US, exceeded in size only by Lake Michigan. The portion of the Lake which lies in Palm Beach County represents 246 square miles of the 700 square mile total of lake area. In addition to serving as a water supply, the Lake's recreational opportunities are expanding and should be explored by the County. Development of tourist trade, by public or private interests, could effectively serve to broaden the Glades economic base, providing local recreational facilities as well as employment opportunities. Points of access and recreational facilities at the Lake are limited and these should be expanded.

An obvious opportunity to provide additional facilities for fishing, camping and boating is the development of Torrey, Kreamer and Ritta Islands which are inside the dike and are now only partially used for recreation. On these Islands the predominant land use is agriculture. The pro-

posed raising of Lake Okeechobee's water elevation by four feet to a crest of 17.5 feet by the Flood Control District would limit or eliminate either agricultural or recreational use of the Islands and therefore, should be carefully weighed both environmentally and economically.

Recommendations for Recreation and Open Space Uses

The County should explore and pursue existing State and Federal funding programs aimed at the acquisition of lands for public recreational use.

Any new subdivision or Planned Unit Development should contain provisions for recreational facilities for use of its residents.

A coordinated effort by municipal and County officials should be directed toward raising the ratio of recreational-area-per-resident closer to the recommended average of ten acres per thousand residents.

Destruction of agricultural or grassy water areas which serve as breeding and feeding grounds for fish should be closely evaluated, particularly if the purpose is simply to supply water for other areas in South Florida which have inadequate density controls on growth.

The County should involve concerned individuals and groups of citizens in its recreational program, having them organized and directed by a professional recreational management individual, to prepare and implement a program for effective utilization of recreational facilities.

The County, in cooperation with other affected governmental agencies, should formulate a recreational facilities program aimed at taking full advantage of the potential of Lake Okeechobee, without seriously disturbing the ecological balance of the area.

NATURAL RESOURCES AND CONSTRAINTS

NATURAL RESOURCES AND CONSTRAINTS

WATER

Water is one of the most vital factors in land use planning. Three basic considerations are: the removal of runoff water through drainage facilities; maintenance of potable water supply; and quality of natural water resources. Flooding, water shortages and water pollution have historically been threats to life and property in south Florida. Unbridled urbanization and poorly-planned development will aggravate already sensitive situations—through further reduction of open spaces essential to water retention, construction in flood-prone areas, and overdemanding of the flood-control primary canal system by runoff water during periods of excessive rainfall and inland flooding.

Overdevelopment without proper attention to water drainage and supply considerations creates a cyclical problem. First, development, by reducing the ground areas available for water absorption, increases runoff and therefore the need for drainage through the canal systems. When the drainage capability is overdemanding, flooding is the natural result. Second, the more water draining from the land through the canal system into Lake Worth, the less is available for absorption and recharge of the underground aquifers, the area's primary source of potable water for human consumption. When the amount of water in the aquifers recedes below desirable levels, salt-water intrusion frequently results. Finally, occupants of the new developments increase the demand for fresh water—the available supply of which has already been depleted by the reduction of aquifer recharge through development of the open land.

Water is a primary consideration when the use of land for agricultural purposes, as well as residential development, is being considered. Agricultural land serves a double function; it is an important contributor to the County's economic base and also provides open land for aquifer recharge areas. Any land converted from an agricultural to a developed state thus reduces the amount of vacant land available for drainage and aquifer recharge.

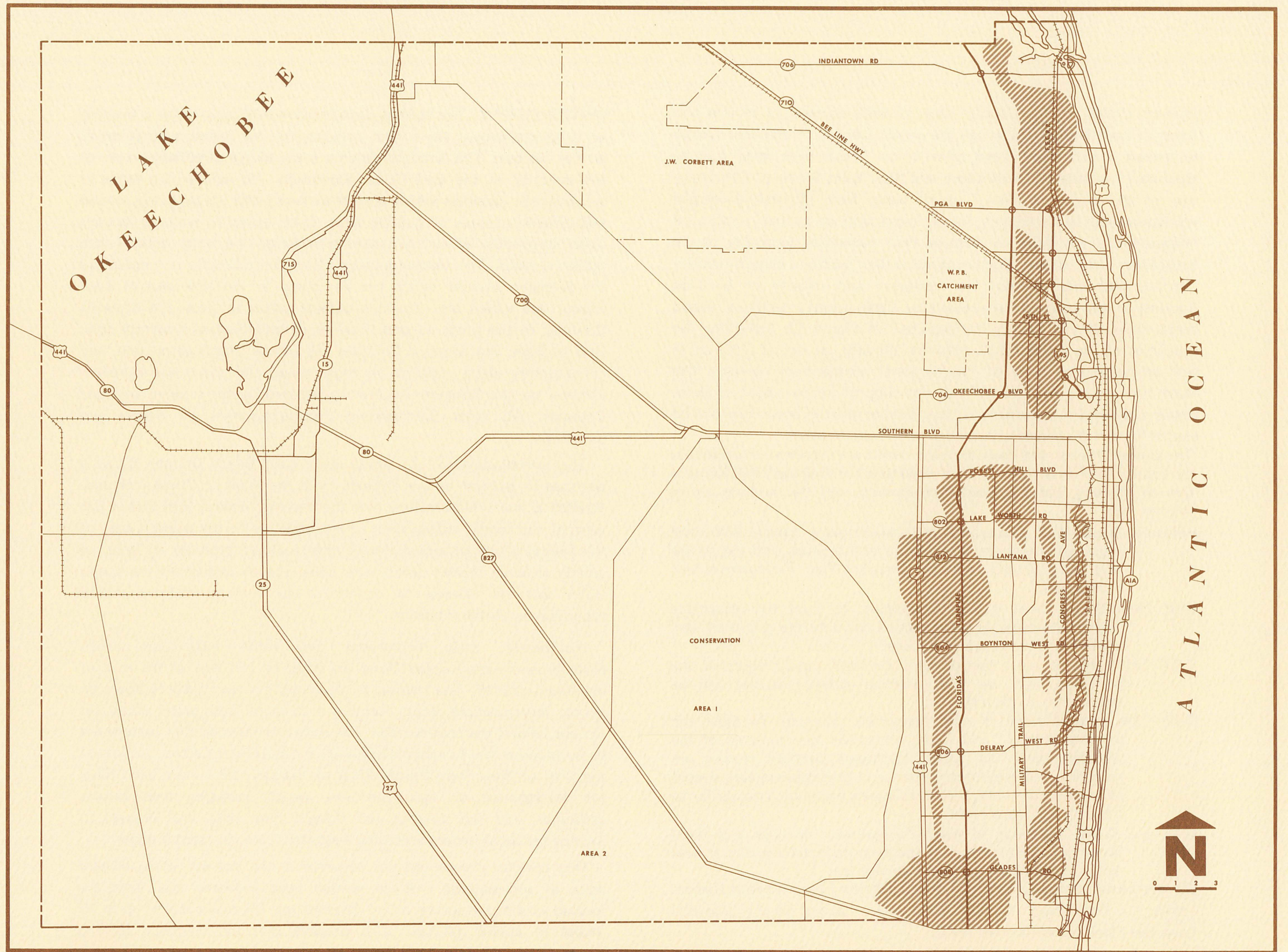
Data was assembled relative to each of the three major water considerations—drainage, supply and quality—which provided the following considerations and guidelines:

WATER DRAINAGE: The physical composition of the land in Palm Beach County determines the flow and distribution of water. The land is

practically flat from the Ocean to Lake Okeechobee and from the Martin County line in the north to Broward County in the south, with the exception of the coastal ridge, paralleling the Atlantic coastline. Ground elevations range from approximately twenty feet above mean sea level (MSL) in the north western section of the County, to a height of less than ten feet between the coastal ridge and the inland waterway; the ridge elevations are twenty-five to thirty-five feet above MSL. The level of ground water rises in proportion to the amount of rainfall. This additional water follows one of two courses. In pristine conditions (and in a few undrained areas today) rain water laid upon the land in a massive sheet until it was eventually absorbed into the ground where it recharged the underground aquifers. The remainder flowed by an overland gravitational crawl to the coastal ridge. The ridge acted as a levee, causing the water to pond on flat land to the west. In modern times most of the land is now urbanized, and great portions of the rainfall drain into the storm sewers or the canal system and eventually empty into the Intercoastal Waterway.

Southern Florida, and specifically Palm Beach County, is in a sub-tropical climatic zone. A characteristic of the sub-tropics is the uneven, annual distribution of rainfall. In the County this takes the form of two-thirds of the annual rainfall occurring during the five month period between June and October. This uneven distribution of rainfall poses two major problems affecting land use planning; drainage of the excess water during periods of heavy precipitation and, conversely, maintaining the underground aquifers at an adequate level to provide sufficient potable water for public consumption and to prevent salt water intrusion during the annual winter drought. Adequate drainage is dependent upon the ability of the system of canals to collect and transport the runoff water. A network of many smaller or secondary canals transport the runoff water into the primary canals which carry it to Lake Worth. The secondary canals are administered by a number of localized authorities such as the Lake Worth Drainage District, the Northern Palm Beach Drainage District, the Acme Drainage District and others. The primary canals are administered by the Central and Southern Florida Flood Control District and the U.S. Army Corps of Engineers.

Through application of engineering criteria it has been determined and verified by the Palm Beach Chapter of the Florida Engineering Society and the Central and Southern Florida Flood Control District that the



INLAND FLOOD PRONE AREAS

primary canals in the County vary in their abilities to receive and transmit runoff water. Although the canals form an interrelated system to remove runoff from inland areas to the Ocean, each canal must be separately evaluated. The Hillsboro and West Palm Beach (C-51) canals, two of the major carriers of runoff water from intensely-developed residential areas of the County, can accommodate no further runoff until improvements are made to increase their capacities according to the authorities cited above. Further development without complementary improvements will increase the frequency and severity of low-land flooding in the urban areas drained by these primary facilities. Flood prone areas of the County are depicted on Figure 12. Increasing the capacities of the major canals requires, literally, an Act of Congress as well as support of State of Florida water management agencies. The State has already indicated it will not support improvement of these canals without County assurances that development in these areas will be controlled and the canals will not become overdemand.

The primary canals and their drainage basins are represented graphically by Figure 13. Primary canals were evaluated for drainage capacity, relative to existing and proposed development, and the findings are as follows: (6)

Hillsboro Canal—"not adequate to meet the primary drainage and flood protection requirements of either the existing land use or the land use proposed under the County's Plan. Enlargement will be required."

West Palm Beach Canal (C-51)—"inadequate to meet the reasonable primary drainage requirements of not only the proposed land use but also the existing land use."

C-17—"adequate to meet the primary drainage requirements of the proposed land use plan. Further detailed studies will be required to confirm this."

C-18—"the present canal is only marginally adequate to meet the primary drainage and flood protection requirements of the proposed land use plan. Additional detailed studies are required . . . a preliminary opinion is that improvement should be made; preferably, by providing each pumping capability to the surface storage system."

C-15 and C-16—"adequate to meet the primary drainage and flood protection requirements of the proposed land use plan, as well as the existing land use in the service area."

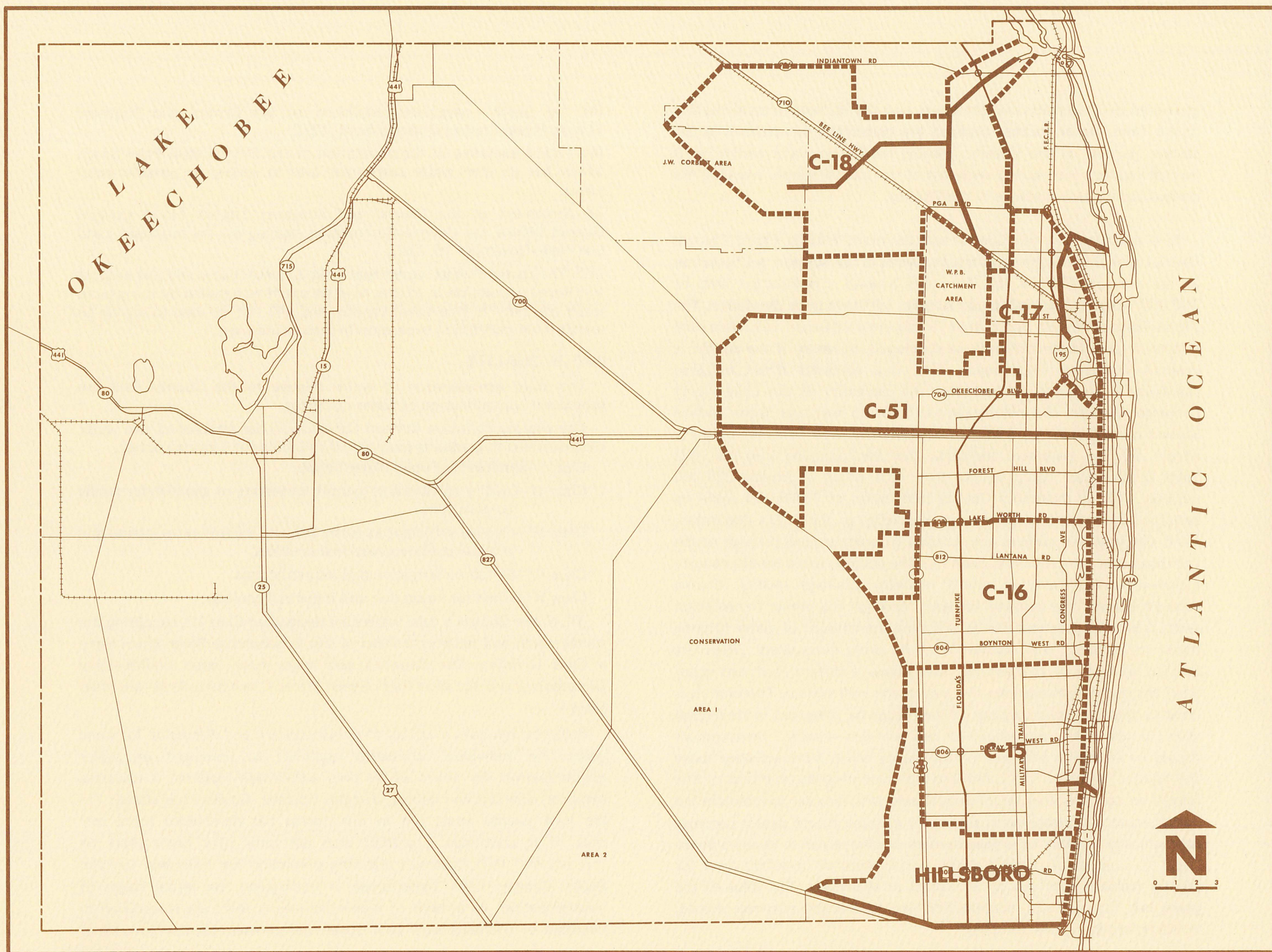
(6) Statement of the Central and South Florida Flood Control District before the Palm Beach County Commission hearing on the proposed Land Use Plan—November 16, 1972.

WATER SUPPLY: The second consideration relative to water is insuring an adequate supply for human consumption by future generations as well as our own. The Anastasia Aquifer is the source of potable water for the majority of the East Coast population. An aquifer is a series of subterranean channels which absorb surface water through the ground and provide a supply of potable water to be tapped by wells. It depends upon absorption of surface water to replenish the water drained into public systems. The southernmost portion of the County is supplied by the Biscayne Aquifer which has its source in the area west of Boca Raton, and which also provides potable water to Dade and Broward Counties to the south as well. Further development of presently open land in Dade and Broward Counties will reduce runoff absorption, and consequently water supplies, in those areas, and will place increased demand on the Biscayne Aquifer to replenish water supplies in those Counties. All other Southeastern Florida aquifers are deeper and unpotable.

The annual pattern of rainfall over Palm Beach County shows a decrease in amount as the distance from the Atlantic Ocean increases. Rainfall is low (40-45 inches) over the beaches; highest (62) inches just west of the coastal ridges, then tapers gradually to the western edge of the county where an annual average of 50 inches is attained. A "hole" of greatly reduced rainfall occurs over Lake Okeechobee where the cooler water and the absence of connective air currents cause a radical reduction in rainfall intensity.

Historically, early habitations and most subsequent urban developments have located along the coast or just east of the area of maximum rainfall. The natural rainfall supply moved easterly down an almost imperceptible slope, forming a chain of fresh water lakes and sloughs behind the coastal ridge. The only remnants of that pattern are to be found in the Loxahatchee Slough and the Water Catchment area of the City of West Palm Beach. Most of the early lakes have been filled for development or agriculture use, greatly reducing their former capacities, and the marshes and sloughs have been well drained to provide for development spreading westward from the coastal ridges.

One curious phenomena has occurred in the last ten years. Several areas of substantially reduced rainfall have appeared and these are located west of the greater urban development (7) with a loss of up to 15 inches in annual rainfall. It is possible that the increased heating



PRIMARY CANAL SYSTEM

generated by pavements and structure, and the increase in condensation nuclei from power sources changed the convective air patterns in the eastern portion of the County, causing rainfall to occur earlier in its normal western movement, with less of the annual supply reaching the central and western portions of the County.

It is estimated by the Central and Southern Florida Flood Control District that the underground aquifer systems can support a population in the area of 700,000 (8). To move beyond a population level of 700,000, additional surface water supplies will have to be developed. The Flood Control District noted, that "a safe yield sufficient to sustain such a level of population can only be developed, however, if the aquifer is properly managed. This means, first, that adequate direct recharge capability is preserved; second, that the capability of the Lake Worth Drainage District channel system to provide recharge from surface sources is maintained; and third, that additional well fields are properly sited." (9) The statement indicated that backpumping into the West Palm Beach Canal could sustain the needs of an additional 350,000 persons. (10) A maximum County population of 1,000,000 could be sustained by present water sources, according to the FCD's evaluation. Land development reduces the amount of open ground through which standing water can percolate down into the aquifer, while simultaneously increasing the amount of runoff requiring drainage facility. During drought periods the demand for water through the public transmission systems is at its greatest; also at this time the amount of water filtering down to recharge the aquifer is at its most diminished. When the amount of water in the aquifer falls below a certain level, salt water from the ocean intrudes into the fresh water well system. Therefore it is obvious that a certain amount of land must be preserved in its natural state to allow for recharging of the aquifers—ideally, development should be limited in that area of the County which is immediately above the aquifer sources. The Land Use Plan recommends retention of this area in an agriculture or estate-density category, in order to maintain the conservation and preservation setting. If at some future date it becomes economically feasible to engage in mass desalinization to convert ocean water to supplies of potable water, preservation of greenbelt areas for aquifer recharge may not be as critical as at present. The value of the green belt for aesthetic, conservation and oxidization purposes should, however, not be lightly dismissed.

(7) "In Depth"—newsletter published by the Central and Southern Florida Flood Control District, April, 1972.

(8) This is exclusive of the population of the City of West Palm Beach which has its own water catchment area to supply its potable water needs.

(9) Statement of the Central and Southern Florida Flood Control District before the County Commission hearing on the proposed Land Use Plan—November 16, 1972.

(10) The report further noted that Lake Okeechobee could not support additional population in excess of what could be handled by the ground water aquifer. "It (the Lake) cannot, and will not, be used to sustain an unrestricted population expansion in these same areas."

WATER QUALITY

The third consideration of water relative to the County land use program is contamination of water resources.

The Florida Pollution Control Commission has established five water classifications to grade the quality and suitability of Florida's water:

Class I—Suitable for Public Water Supply

Class II—Quality sufficient to permit harvesting of shellfish for public consumption.

Class III—Quality sufficient to foster fish and wildlife propagation and provide public recreational facilities.

Class IV—Suited for irrigation and industrial uses.

Class V—Suited for navigation and industrial cooling.

All of the County's tidal waters are designated Class III, excepting the south, north and northwest forks of the Loxahatchee River which carry a Class II rating. The County's two major fresh water bodies—Lake Okeechobee and the West Palm Beach Water Catchment Area—are rated Class I.

Pollution has been a subject of public concern and discussion for some years. An individual eminently qualified to comment on water contamination, by virtue of his own world-wide research, is undersea explorer, scientist and author, Jacques Costeau. Costeau has stated: "In the past twenty years life in our oceans has diminished forty percent. If it continues, I predict man has only fifty more years on this planet." (11) Costeau's alarming prediction has relevance to Palm Beach County—Lake Okeechobee is undergoing the initial stages of eutrophication. As a result of man's habitation, the Lake is receiving an overload of nutrients such as nitrogen and phosphorus, components of

fertilizer. These nutrients result from sewage effluent, agricultural runoff, urban drainage and animal waste, and the effect of the nutrient increase is to promote rapidly increasing plant growth which results in fish kills, ooze and a general degeneration of the quality of the water. The affected water area will give rise to noxious odors, foul taste, reduced fish and animal life and increasing numbers of insects. As was stated in a report to the Florida Cabinet by the Center for Urban and Regional Studies, University of Miami, ". . . once a lake has become critically eutrophic, correction may be impossible or arduous and costly." (12) This report recommended statewide action to stem the eutrophication of the Lake and maintain its existing aesthetic and functional qualities. Palm Beach County should support this plan or possibly loose one of the recreational cornerstones of the County, as well as a major water supply potential.

Water management functions for the entire southeastern Florida area should be consolidated in one agency. This will insure proper distribution and utilization of water sources throughout the area and prevent one area draining the water supply or forcing increased runoff on areas managed by another authority. A survey should be conducted by the State of Florida to determine the agency best equipped to handle this vital and troublesome subject.

(11) Impact Magazine, (September 1971)

(12) The Kissimmee-Okeechobee Basin—a report to the Florida Cabinet December 12, 1972, Page 49

SOILS

Although not an absolute determinant of land use, soils are an important consideration in land use planning for several reasons. First, different types of soil have varying abilities to absorb water as a function of the aquifer recharge process and must be considered in conjunction with drainage facilities. Secondly, soils act as a limitation on construction activity. As represented graphically in Figure 14, firmer soils are more economical in construction; swampy or extremely moist soils require extensive dredging and filling operations to support development. Finally, soils, particularly their arrearability, are a prime determinant in the designation of land for agricultural purposes.

There are 54 distinct soil types in Palm Beach County. These are

broadly classified as mineral (sandy) soils or organic (peat) soils and sometimes a mixture of the two. For ease in presentation and discussion, the soils are grouped into 14 soil associations named according to the predominant types within the groupings; however, other types do occur (within the 14 soil groupings). which can greatly alter the characteristics at specific locations. In Palm Beach County, due to the limited range of characteristics and the plentiful availability of fill material, there is virtually no soil type which cannot be, and is not being, used for urban development, or which cannot be covered over or replaced by soils with fewer limitations.

The Generalized Soils Map (Figure 14) reflects the distribution of soil groupings in Palm Beach County. In the eastern portion are found the deep, sandy, well-drained, somewhat acid soils which make up the coastal ridges and the world-renowned beaches, the latter being a mixture of quartz sands and shell particles. These soils were blown and washed into high, dry dunes along the coast and comprised the sites of earliest habitation by men in this area. Few large, vacant areas remain on the sandy coastal ridges. This area, as indicated on the Soils Map, has the soils best suited for construction and has already been largely developed. Development has in fact pushed into the next area, a rather poorly drained strip of varying size (generally nine miles in width) immediately west of the coastal ridges. These soils comprise basically mineral, sandy flatlands but are also characterized by many ponds and sloughs, some swamps, most with a higher organic content with corresponding greater soil limitations. They require extensive drainage and frequently must be replaced or covered with fill material in order to provide drainage and a higher load-bearing capability. Another increasing area, shown in black on the map, indicates when "MADE LAND" has been required for development. Spreading westward into the sandy flatlands along the eastern edge of the Conservation Area 1 there is a narrow strip of swamps, where standing water and differing forms of vegetation have created a unique association of wet, spongy, marshland. These areas are ideal for preservation as recreational and open space uses, with development limited to agricultural or, at most, estate density.

Finally, organic soils, are represented in brown and cover the western half of the County. These are peat soils, of varying thicknesses, overlaying limestone or shell. They have been described as the most productive soils in the United States, but recent reports indicate that

these organic soils are oxidizing (due to extensive surface drainage) and are not being replaced in existing agricultural practices. In places even the underlying material is visible through the thinning organic soils which in some areas generally will be oxidized and substantially diminished in approximately forty years unless current land practices are changed. (14)

The following excerpt from "Agriculture and Related Activities", prepared by Gould Associates for the Palm Beach County Area Planning Board, gives an impression of the soil composition in the Glades area of the County:

"Soil is the most basic element which controls agriculture. . . The soil of the Glades area is unique. Over a period of eight to ten thousand years, saw-grass continually matured, died, and decayed in the marsh waters of the Everglades. The drainage of certain parts of the Everglades around Lake Okeechobee revealed the largest known bed of organic soils in the world. From an agricultural standpoint, the soil of the Glades area provides local growers with both advantages and disadvantages. The main advantage is that it is extremely rich soil. In its original state, practically no soil treatment (fertilizer, etc.) is needed in order to support agriculture. This reduces cost of production and increases production per acre. A second advantage is that an estimated 200,000 acres of organic, Everglades soils are still lying under water waiting to be drained.

The major disadvantage of this soil is that it is slowly compacting and decomposing through oxidization. The nature of the soil is such that as it is drained and exposed to air, it compacts (the soil layer becomes thinner) and oxidizes—both at a very slow rate. These two phenomena, together called soil subsidence, affect agriculture in economically significant ways. As it compacts, the soil reaches a point where it will change its capability for supporting certain types of crops. Large root systems and deep plowing will not be tolerated. And the capability for intense use of the land will decrease. As it oxidizes, more soil treatment will be needed, and as it becomes significantly lower in quality, high intensity production of vegetables and sugar will not be supported.

Theoretically, the end result of continued soil subsidence is soil (or rock) which is unfit for agricultural purposes. Whether this will actually occur in the Glades is a subject which has been debated for many years. However, it is generally accepted that: (A) soil quality will gradually decrease; (B) more extensive and intelligent treatment of soils will be required; and (C) adjustments in land use practices will become necessary.

The rate of soil subsidence is also debated. It is uncertain when (or

if) the soil will become useless; when significant amounts of soil treatment will be needed; and when land use will have to change. However, most authorities give the organic soils at least another 40 to 50 years, if used wisely." (15)

Since soils can be readily modified by man, given sufficient investment in fill and drainage methods, they are not considered primary determinants of land use, except in conjunction with other factors such as drainage, vegetation, and other environmental considerations. In summary, the soils of Palm Beach County vary from the deep sandy coastal ridges and beaches to the organic peat soils of the northern Everglades, with a zone of mixed, poorly-drained mineral soils in between. The coastal area, as seen on the map is most readily developable, with development capabilities reducing progressively toward the west. The less readily developable soils areas are presently in an agricultural use and can be predicted to remain so for sometime.

(10) Soil Conservation Service, Interim Report, 1972, Page 18.

(13) "Made Land"—land so altered by man made changes or fills that the original soil characteristics are obliterated.

(14) Environmental Report—Bartington & Barrada, 1972.

(15) From Technical Paper No. 5 "Agriculture and Related Activities" by Gould Associates for the Palm Beach County Area Planning Board.

DESCRIPTION OF SOIL TYPES

1. St. Lucie—Paola—Gently sloping, excessively drained, strongly acid soils on long narrow ridges and isolated knolls. Sandy soil overlying white or brownish yellow sands extending to depths greater than 80 inches water table is generally below depth of 80 inches.
2. Palm Beach—Coastal Beach—Gently sloping, well to excessively drained, neutral to calcareous sands extending to depths of 80 inches or more. Water table is always below 60 inches in the ridges.
3. Pomello—Immokalee—Gently sloping, moderately well-drained, deep, nearly white, acid sandy soils with an organic pan in slightly elevated knolls and ridges; intervening flatlands of nearly level, poorly drained acid sandy soils with an organic pan. Water table normally at 40 inches; in poorly drained areas it rises to within 10 inches of the surface for 1 to 2 months each year.
4. Myakka—Basinger—Nearly level, poorly drained acid sands with an organic pan on broad flatlands; interspersed with nearly level, poorly

- and very poorly drained, light and dark colored soils in sloughs and ponds; water table is normally at depths of 10 to 30 inches; rises to within 10 inches of the surface for 2 to 6 months in the slough areas.
5. Wabasso—Felda—Nearly level, broad flatlands of poorly-drained, moderately-deep sandy soils with an organic pan over neutral to calcerous, loamy subsoils, interspersed with numerous soils and ponds of poorly and very poorly drained, moderately deep sandy soils with neutral to calcareous loamy subsoils. Water table is at or near the surface for 1 to 2 months on the broad flats and for 2 to 4 months in the sloughs.
 6. Felda—Holopaw—Nearly level, broad low wetlands of poorly and very poorly drained, moderately deep and deep sandy soils with neutral to calcareous loamy sub-soils. Water table is less than 10 inches below the surface for 2 to 6 months during most years.
 7. Basinger—Pompano—Nearly level, broad low wetlands of poorly drained acid to neutral, deep sandy soils with an organic stained layer and similar soils that lack an organic stained layer. Little natural drainage; seasonally high water table is within 10 inches of the surface for 2 to 6 months during most years.
 8. Boca—Felda—Nearly level, broad low flatlands of poorly drained, sandy soils moderately deep to limestone interspersed with poorly and very poorly drained sandy soils over neutral to calcareous loamy sub-soils. Little natural drainage pattern; seasonal high water table is within 10 inches of the surface for 1 to 2 months during most years. Lower lying areas have a water table within 10 inches for 2 to 4 months. Some areas remain ponded by shallow water for periods of 6 months or more.
 9. Everglades—Broad, level marshlands of very poorly drained, nearly neutral, deep organic soils. Water covered for 6 to 12 months most years in undeveloped areas.
 10. Pahokee—Broad, level marshlands, very poorly drained, nearly neutral, moderately deep organic soils overlying limestone. Undeveloped areas are covered by water for 6 to 12 months most years.
 11. Swamp—Broad, level, low wetlands of very poorly drained acid to alkaline, mineral and organic soils.

12. Torry—Broad level marshlands of very poorly drained, neutral to mildly alkaline deep organic soils with a high content of fine mineral material. Water table depths are regulated to depths of from 12 to 48 inches by water control systems. depending upon crop requirements.
13. Winder-Glades—Nearly level, broad low wetlands of poorly and very poorly drained shallow and moderately dry sandy soils with neutral to calcareous loamy subsoils. Water table covers the soil surface from 6 to 12 months of most years.
14. Made Land—Land areas which have been so altered by man and machinery as to render them unidentifiable as natural soil bodies.
15. Urban Land—No comprehensive analysis of the soil composition of this area has been conducted. Large portions of this land have been developed and would probably be described by the definition for made land.

Description from a Detailed Soil Survey of Palm Beach County, Florida conducted by U.S. Dept. of Ag. and Palm Beach—Broward Soil and Water Conservation District and the Florida Agricultural Experiment Stations.

BEACHES

Palm Beach County is gradually losing that resource upon which its very name and its world-wide reputation as a tropical resort area are founded—its beaches. (16) Erosion and private development are rapidly reducing the beach area. Although the total County shoreline extends for forty five linear miles, the usable beach area covers only approximately 97 acres. Five miles of the shoreline has little, if any, beach area, being buttressed with private sea walls and similar man-made encroachments. Of the remaining forty miles, approximately half is developed and in private ownership. Fifteen miles of the remaining shoreline is privately-owned though undeveloped, which leaves approximately five miles in the public beach area, seventy-five percent of which is developed as bathing area or as other recreational purposes.

Provision of adequate beach area for the recreational enjoyment of residents and tourists is a concern of planning. A report issued by the Florida Department of Natural Resources in 1971, titled "Outdoor Recreation in Florida" set forth recreation goals for the year 1975, with additional projections to the year 2000. This report, adopted as valid planning criteria by the U.S. Department of the Interior as well as the

Department of Housing and Urban Affairs, set forth a ratio of one linear foot of beach for each two user-persons and an area standard of 100 square feet per user. The number of beach users among the resident population is, therefore, the prime determinant of beach area requirements.

The Central and Southern Florida Flood Control District noted that the existing adult population of the County (262,699) during 1972 generated a demand for nine million user occasions; another 1.6 million user occasions were required for children under fifteen years of age. (17) Using the standards of the Department of National Resources, the data from the Flood Control District and the population provided for in the Land Use Plan, it was projected that a peak demand for 22 linear miles, or 230 acres, of beach would exist when the population provided for in the Land Use Plan was reached. A beach acquisition program is underway in the County which promises a partial solution to the immediate beach needs in the area, but, only 5 linear miles of beach are presently available for public use. This deficit might partially be met by increasing related, water oriented activities, and by development of recreational areas along fresh water bodies and the Intracoastal Waterway.

(16) Beach is defined as the sand area between the high tide mark and the aquatic vegetation line. In the case of Palm Beach County this area is composed of quartz sands mixed with miniscule shell fragments.

(17) Technical Report 2—August 1972



TRANSPORTATION

TRANSPORTATION

As the number of persons in an area increases, so too obviously does the number of vehicles and a demand is created for additional facilities to transport the vehicles. The transportation function of land use planning deals with getting people driving their vehicles (or riding some form of public or private transportation systems) from one place to another within the general area as efficiently, quickly and economically as possible. The primary transportation mode in the urbanized area of Palm Beach County is the highway system; only an estimated 8% of the population uses modes other than automobiles. In the development of the Land Use Plan, the existing transportation system, with projected improvements, was considered to be a primary factor in distributing land use patterns.

The development of a coordinated, highway facilities plan for the urbanized area of Palm Beach County was first attempted as a joint effort of the Florida Department of Transportation and the Federal Bureau of Public Roads, U.S. Department of Transportation. A study, issued in 1969 and developed in conjunction with a private consulting firm, included existing land use data, trip generation data, and cost estimates. The study projected road improvement needs in a staged program extending through 1985. (18) This plan was developed as part of a State-wide program of road networks and concentrated on primary corridors and the feeder roads which supplied them. A group, composed of planning and engineering officials from various concerned governmental agencies, was created to guide the implementation of the road improvement program as outlined in the 1969 plan. The Technical Coordinating Committee, as the group was designated, is composed of State, County, and local officials and meets monthly. Included in the plan was a cost estimate projecting an annual average expenditure of \$6.5 million dollars per year for the period 1970-85 for the acquisition of rights-of-way as well as cost of actual road construction. The expenditure of public funds, and the resulting construction, has not kept pace with the projected schedule, and is falling behind at the rate of about \$5 million per year. Competitive demands for public funds have reduced the allocations available for road construction activity. Additional population, on the other hand, has continued to flow into the County, increasing the use of existing highways.

A second plan, developed by the County Engineering Department, and aimed at the internal pattern of streets and roads within Palm Beach County was begun in conjunction with the Land Use Plan. The Palm Beach County Thoroughfare Plan, as it is known, will rely on the density distributions inherent in the Land Use Plan to project future rights-of-way and additional land requirements. Desirable locations for new commercial and industrial sites can also be determined. The density data can be computer-analyzed to create an "ultimate" transportation facilities program. This will be an important, second stage program in the implementation of the Land Use Plan and an update of the Thoroughfare Plan was begun immediately after adoption of the Land Use Plan. As was stated by an official of the State Department of Transportation, at the Technical Coordination Committee meeting of August 30, 1972:

"In the preparation of transportation and land use plans for the urban area, ultimate, or "holding-capacity" forecasts of land use and socio-economic information should be made in order to enable transportation planners to develop, as closely as possible, plans that reflect the ultimate or end-result of transportation systems development. By doing this, . . . area planners will have the benefit of knowing what the ultimate right-of-way requirements will be in order to enable them to secure adequate, permanent right-of-way dedications." (19)

It should be noted that the general organization of uses and density distributions reflected in the Land Use Plan are so aligned as to be compatible with a coastal mass transit system should one develop in the foreseeable future.

(18) West Palm Beach Urban Area Transportation Study—Mel Conner & Assoc., Inc. 1969.

(19) Mr. Craig Miller, District Four Office, Department of Transportation; Memorandum to Technical Coordination Committee.

ECONOMICS

ECONOMICS *

The economy of Palm Beach County is centered around three basic activities; Agriculture, Tourism and Manufacturing.

Agriculture—Although the number of farms in the County has shown a decrease of approximately 30% since 1950, the acreage used for agricultural activities has increased by roughly the same percentage during the same time period, indicating consolidation, and the decline of the smaller one family farm (Figure 15). Major crops and activities include vegetables—mainly beans, corn, celery and tomatoes—(90,920 acres in 1964), sugar cane (117,500 acres) and cattle/dairy (59,150 acres) (Figure 16). It is estimated that some 150,000 vacant acres remain in the Everglades which are suitable for production of both cane and vegetables. Figure 17 shows the dollar yield of these and related crops over the past several growing seasons. Gross crop value has increased three-quarters of a million dollars over the past two growing seasons.

Palm Beach County agriculture in the 1970's will probably not differ dramatically from past patterns. With agriculture generating nearly 300 million dollars per year, and employing an average of some 20,000 persons monthly (Figure 18), it can be expected to continue as a major economic activity in Palm Beach County. The Land Use Plan provides for a more definitive agricultural land use by specifying the areas which should be protected from non-compatible uses and the Zoning Code specifies the uses to which these areas may be employed.

Tourism—As can be seen from the figures indicated in Figure 19, the increase in the number of tourists visiting Palm Beach County has nearly doubled in the eight year span from 1962 to 1970, indicating that the "Florida vacation" previously considered a luxury privileged to the wealthy, is becoming increasingly available to those in the middle income brackets. The figures also disclose a decline in the number of automobile conveyed tourists and an increase in persons using airplane as a means of conveyance, which further supports the concept of an increasingly affluent middle class. Figure 20 depicting the distribution of incoming tourists travelling by automobile during a recent year reveals the "unseasonality" of the tourist trade. While the bulk of tourist activity remains centered around the winter "season", the summer months are experiencing developing tourist interest.

FIGURE 15

NUMBER AND SIZE OF PALM BEACH COUNTY FARMS, 1910-1970

Year	Population	No. Farms	Land in Farms (Acres)	Average Acres Per Farm
1910*	5,577	428	18,486	43.1
1920*	18,654	624	37,527	60.1
1930	51,781	874	34,576	39.6
1940	79,989	808	80,175	99.2
1950	114,688	851	392,228	460.9
1959	228,106	527	372,408	706.7
1969	345,553	601	527,210	877.2

Sources: Census of Population and Census of Agriculture, 1910-1970.

* Martin County was not formed until 1925 and is included in Palm Beach County for these years.

FIGURE 16

CATTLE, VEGETABLES, CITRUS, AND SUGAR CANE IN PALM BEACH COUNTY, 1910 - 69

Year	No. of Cattle	Acres of Vegetables	No. of Citrus Trees	Acres of Sugar Cane
1910*	2,796	1,863	15,432	0
1925	6,000	5,274	128,436	91
1930	2,790	12,119	64,740	0
1940	6,614	57,313	104,349	12
1945	17,400	94,032	127,396	360
1954	84,238	77,338	178,644	130
1959	33,898	85,073	127,110	25
1964	59,150	90,920	236,064	117,500
1969	107,656	94,474		

Sources: Census of Population and Census of Agriculture, 1910-1970.

* Includes Martin County

FIGURE 17
AGRICULTURAL PRODUCTION IN PALM BEACH COUNTY

CROP	1969-70	1970-71	1971-72
Beef	7,540,000	8,176,100	11,160,000
Dairy	9,814,504	9,053,832	13,630,224
Sod	7,850,000	9,120,200	10,100,000
Flowers	7,920,000	8,240,420	8,050,000
Ornamentals	4,100,000	4,780,610	6,100,000
Citrus & Tropical fruit	4,200,000	4,672,150	5,100,000
Sugar	80,175,418	100,737,026	107,903,788
Vegetables	83,784,414	91,854,178	112,300,546
TOTAL	\$205,439,134	\$236,634,507	\$274,344,558

Source: County Agricultural Extension Service

FIGURE 18
AGRICULTURAL WORKERS IN PALM BEACH COUNTY
BY MONTH 70-72

	1970	1971	1972
Jan.	24,100	26,800	27,700
Feb.	23,500	24,200	25,200
Mar.	17,400	19,600	21,000
Apr.	20,000	18,700	18,700
May	18,200	15,800	17,000
June	13,000	13,300	
July	11,900	11,700	
Aug.	11,900	12,600	
Sept.	13,700	13,900	
Oct.	16,800	16,800	
Nov.	15,700	21,600	
Dec.	25,900	26,500	

Source: Florida Employment Service.

FIGURE 19
TOURISTS IN PALM BEACH COUNTY BY METHOD OF TRAVEL
1962 - 1970

	Tourists	Automobile	Airplane	Train	Bus
1962	407,014	84.0%	11.0%	3.0%	2.0%
1964	471,545	82.2%	12.3%	2.6%	2.9%
1966	532,166	81.8%	13.8%	2.0%	2.4%
1967	559,010	79.8%	16.4%	1.7%	2.1%
1968	582,525	77.8%	18.7%	1.6%	1.9%
1969	641,693	78.5%	18.9%	1.2%	1.4%
1970	749,488	79.9%	18.2%	0.9%	1.0%

Source: Florida Department of Commerce, 1970 Florida Tourist Study

FIGURE 20
PERCENT DISTRIBUTION OF INCOMING AUTOMOBILE
TOURISTS BY MONTHS, PALM BEACH COUNTY AND
FLORIDA, 1967

Month	Palm Beach County	Florida
January	10.1%	6.3%
February	9.6%	6.4%
March	8.6%	8.6%
April	5.5%	6.7%
May	4.8%	1.0%
June	6.8%	11.1%
July	8.7%	12.8%
August	8.6%	11.9%
September	5.9%	8.8%
October	8.0%	6.6%
November	10.3%	6.8%
December	13.1%	9.0%
Total	100.0%	100.0%

Source: Gould Associates, "Tourism", Technical Paper No. 4, prepared for the Area Planning Board of Palm Beach County, 1969.

Both the average expenditure per-person/per-day and the average length of the tourist visit itself have declined during the years between 1967 and 1970 (Figure 21). However, the 749,488 tourists entering the County in 1970, spending an estimated \$156,61 per-person during their stay, generated one hundred and seventeen million dollars in the purchase of goods and services. (20) According to the multiplier effect of economic theory, the initial tourist contribution multiplies threefold in its overall effect on the economy. This figure would result in over three hundred and fifty million dollars total effect on the economy. Tourism, therefore, can be anticipated to continue as an important contribution to the County's economy. The Land Use Plan defined several areas of high density for resort development along the coasts, which with the projected areas for beaches and recreational areas, will augment the tourism industry.

Manufacturing—The importance of manufacturing to the County's economy, as an employment factor is depicted in Figure 22. Manufacturing employment has nearly doubled in the eight year period from 1963 to 1971. The major employment growth occurred in machinery manufacturing, especially of an electrical-related nature. In 1968 manufacturing contributed \$145,000,000. to the economy; in 1970 that figure rose to \$200,000,000., indicating a rapid rate of growth. Manufacturing of a "clean", research-oriented variety—will continue to develop as an important segment of the County's economy. This is a highly desirable variety of industry, paying high wages, employing skilled technical workers, being non-pollutant and contributing significantly to the tax base.

The Port of Palm Beach is located on the west shore of Lake Worth in the City of Riviera Beach, approximately one mile from the ocean. Although over one hundred classifications of cargo are handled, two commodities—cement and petroleum—account for some ninety percent of the commerce passing through this facility. The Port is situated with easy access to rail lines as well as to major thoroughfares such as I 95 and the Florida State Turnpike. Although considerably smaller than other major ports, such as Port Everglades, Miami, and Jacksonville, in terms of tonnage shipped, the Port is still considered a viable contributor to the County's economy. In the Land Use Plan, a generous amount of land adjacent to transportation routes has been defined for industrial uses to accommodate the growth of industry in the County.

FIGURE 21
LENGTH OF STAY AND EXPENDITURES OF TOURISTS,
PALM BEACH COUNTY

Year	Aver. Expenditure Per Person Per Day	Aver. Length of Stay Per Person	Aver. Expenditure Per Person Per Stay
1960	\$ 8.80	\$ 19.97	\$ 171.88
1962	14.73	11.60	171.00
1964	15.76	11.33	178.56
1966	16.34	14.70	240.20
1967	17.20	14.80	254.56
1968	17.59	15.63	274.92
1969	18.50	12.90	238.65
1970	12.63	12.40	156.61

Source: Florida Department of Commerce, 1970 Florida Tourist Study.

FIGURE 22
MANUFACTURING EMPLOYMENT, NON-AGRICULTURAL
EMPLOYMENT AND PERCENT PALM BEACH COUNTY,
FLORIDA AND UNITED STATES

	Non-Agricultural Employment	Manufacturing Employment	%	Florida %	U.S.%
1963	69,300	11,900	17.2	15.8	26.9
1964	73,300	12,500	17.0	15.5	26.7
1965	79,200	14,000	17.7	13.1	27.1
1966	86,500	15,700	18.2	16.0	27.9
1967	88,900	15,300	17.2	16.1	27.6
1968	96,200	17,600	18.3	16.1	27.4
1969	103,200	18,600	18.0	15.8	27.1
1970	123,000	20,500	16.7	13.0	25.8
1971	137,900	20,000	14.5	12.4	24.6

Sources: Bureau of Business and Economic Research, University of Florida.
Florida Statistical Abstract, and Council of Economic Advisors,
Economic Report of the President.

The Palm Beach International Airport serviced 870,815 passenger trips during 1971 via four major and two local scheduled carriers. A total of 862,433 lbs. of air freight was processed during the same year through the terminal. Palm Beach International can be expected to increase its economic significance to the County as development continues, and population increases. It has been estimated that airport facilities, as they presently exist, will reach saturation demand of facilities by 1975. (21)

Rapid urban growth, particularly of a residential nature, traditionally outstrips government's ability to deliver needed public services such as schools, roads, utilities, police and fire protection and recreational areas. Resources such as beaches, water, air, soils and wildlife which have not only aesthetic and recreational value but which also support the County's economic base as it relates to tourism, construction, and agriculture, are threatened. Jeopardizing these resources imperils the area's very livelihood and quality of living. Polluted water, water shortages, depleted soils, eroded and overdeveloped beach areas, and inadequate transportation facilities are very real deterrents to prospective inhabitants, tourists, and industrial operations who may be considering locating or visiting within the County. The concept of preserving areas in their natural state has overall economic value to the County. In this way we can preserve essential natural functions as well as create tourist attractions and recreational opportunities.

Clearly, if the County is to avoid loss of economic potential, unplanned development cannot be permitted to impair the necessary interaction among natural systems.

* Data for this section supplied by Dr. James A. Nicholas, Economics Department of Florida Atlantic University, and Mrs. Margaret Barovich, Staff Research Assistant.

(20) Florida Tourist Study—1970—Florida Department of Commerce

(21) Report by Palm Beach Chapter, Florida Engineering Society—Nov. 16, 1972



IMPLEMENTATION

IMPLEMENTATION

The creation and adoption of the Land Use Plan was a first step toward orderly, incremental development in the County. This section describes those future actions necessary for achievement of that goal of responsible growth through programs to implement the intent of the Land Use Plan.

Legislation

The major legislative support for the Land Use Plan is the Palm Beach County Zoning Code which became law on February 2, 1973 and which developed concurrently, and integrated, with the Land Use Plan. The Code is a functional document, specifying the permitted land uses and restrictions, in each of several zoning categories which, in turn, are designed to facilitate the uses embodied in the Land Use Plan. The various zones are represented on the Land Use Plan by a color code.

The Planned Unit Development section of the Code contains provisions for density incentives some of which are permitted in exchange for the dedication of at least a specified percentage of open space area, by the developer. The "P.U.D." concept includes a solution for recreational requirements for the population generated on individual sites, as well as criteria for the transportation and drainage requirements of planned developments. Other features of the Zoning Code include an agricultural zone (AG) which is truly designed to protect farming-related operations for their own values, rather than treating them as holding areas for future development, and a Conservation-Preservation zone (C/P) which prohibits those land uses which would endanger the natural flora, wildlife and historical sites in areas so defined

The Subdivision Regulations, which became effective on February 5, 1973, set forth the design standards and construction criteria for physical development within the various zones. It is the purpose of these regulations to insure safe structural construction in keeping with the preservation of the health and general welfare of the County residents. Finally, the Sign Ordinance and Landscape Code are other supportive legislation to the Zoning Code, designed to enhance the aesthetic appearance of the community, and to bring order to these important aspects of development. These ordinances became effective on January 1, 1973, and January 18, 1973 respectively. All four of these ordinances are included in Volume I of the Palm Beach County Land Development

Manual which is available for reference and for sale to the public through the Planning, Zoning and Building Department, P.O. Box 1548, West Palm Beach, Florida 33402.

A number of planning programs will be necessary in addition to the mandated annual review of the Land Use Plan, to carry out the intent of the Plan and to implement the goals and recommendations set forth in this narrative.

Community Services Program

A program concerned with health, sociological and human resource programs, schools, rehabilitation, correctional and environmental problems which can be approached through the framework of the Land Use Plan, will be established according to professional planning procedures. Building, housing occupancy and population data will be applied to updating the Existing Land Use Map, and will be evaluated through computer analysis to determine changing demands in specific geographic areas for various community services. Data will also be collected and inventoried regarding the existing numbers and types of community facilities, such as schools, and other public health and safety considerations to further assist in the forecasting of future needs in various areas.

Recreational Program

A Recreational Planning Program is of great urgency, so that desirable locations may be obtained before land prices rise even higher than the present rate. The County's deficiency in providing recreational areas has already been detailed elsewhere and this program receives a high priority on the list of pending programs. The beach-acquisition program is an important aspect of recreational planning for Palm Beach County, including the acquisition and development of beach areas, coordination of development plans with adjacent public and private areas and protection of the beach environment. A concerted effort must be made to obtain Palm Beach County's share of the State of Florida's forty million dollar recreational land bond issue to continue the process of acquiring recreational lands originally begun with Palm Beach County funds.

Municipal Liason

Coordination with various municipalities will be another important implementation function. In many cases the densities of the various

residential zones are considerably higher in the municipalities than for corresponding adjacent zones in the unincorporated area of the County. If the higher density zones of the cities are extended into presently unincorporated areas through annexation procedures, the population allowed for in the Land Use Plan could increase significantly and the Plan's intent would be jeopardized.

Conservational-Preservation Program

A major thrust of the Land Use Plan was aimed at identifying environmentally sensitive and endangered lands and placing them in a conservation/preservation category. The three major areas, identified by the Land Use Plan, should be acquired to insure the preservation of their natural resources for the enjoyment of future generations as well as for the protection of the environment. Purchase of these areas through State Environmental Land and Water Bond funds will place them in the preservation category without imposing an additional tax burden on the taxpayers. Liason will be maintained with conservation oriented agencies of government and private organizations in the area to continue the momentum of activity required to implement the Land Use Plan.

Vigorous, coordinated efforts to carry out the programs described above will insure continued progress toward the insurance of a beneficial environment in Palm Beach County for decades to come. The adoption of the Land Use Plan was the first step toward this goal.

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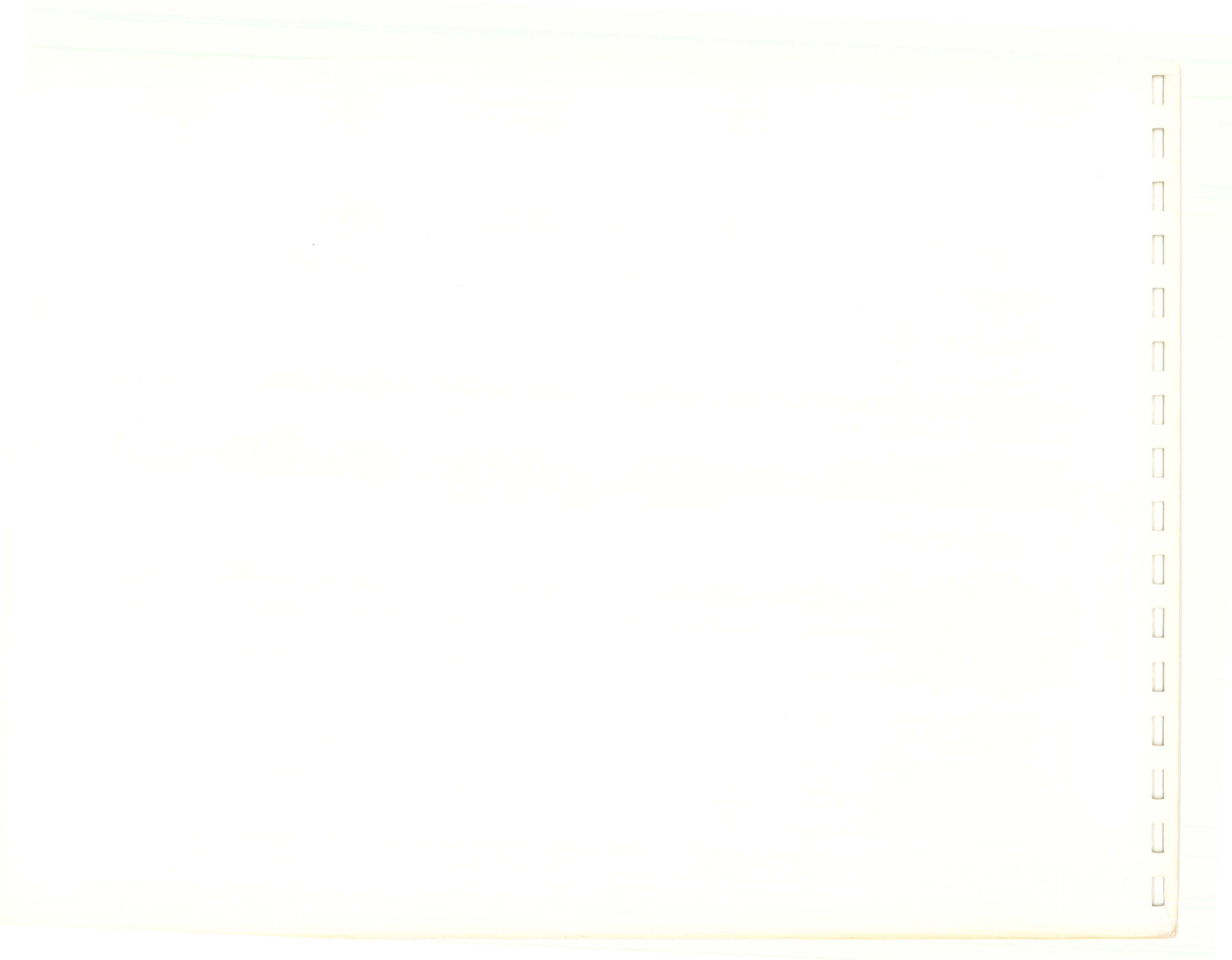
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EXISTING LAND USE



LAND USE PLAN



